EFFECTS OF A COGNITIVE PROCESSING MODEL ON CAREER RELATED GENDER ROLE ATTITUDES AND PROBLEM-SOLVING SELF-EFFICACY OF ADOLESCENT FEMALES

By

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The data from this study may contribute significantly to the development of vocational theories appropriate to the female population studied as well as assist in defining the applicability of currently applied career development theories to women. The findings may provide a research focus on the factors meaningful in the career development of women and in their successful implementation of careers.

In addition, the professional practice of educators may be enhanced by increased knowledge acquired regarding the career development needs of females. For example, school counselors' identifying appropriate goals for guidance programs, strategies selection, program development, identifying resources and activities may be improved. The results may also help teachers increase their sensitivity to the special needs of female students. Also, their choices of instructional strategies may be impacted. Additionally, school administrators who have acquired such knowledge may be more likely to provide the necessary support for successful implementation of new programs and for making changes in currently implemented ones. Further, this intervention has positively impacted hundreds of girls in rural communities in the state of Florida.

CHAPTER 1
INTRODUCTION

Recent societal changes, including shifts in the economy, increased employment opportunities for women, changes in the family structure, and changing societal norms, have created a need for a greater base of information about career development in regard to gender-based differences.

The family in western culture is undergoing a rapid change from the traditional family pattern in which the husband was the primary bread-winner to the dual-worker and single-female headed household arrangements (Amatea, Clark, & Cross, 1982a; Parnell, 1994; U.S. Bureau of the Census, 1986, 1989, 1992, 1993). Families have experienced difficulties. Included are women adapting to changing norms that include role overload and merging personal sex-role definitions with career and family roles and sociocultural definitions of what is considered masculine and feminine (Amatea, Clark, & Cross, 1982b; Bandura, 1986a; Center for Population Options, 1989).

Early adolescence is an important period in the development of an identity that is congruent with eventual work interests (Wearne, 1991). According to Erikson, failure to do so may result in an inability to develop a focused career path. Unfortunately, efforts to achieve this goal may run counter to behaviors associated with career goals (Amatea et al, 1982a; Bandura, 1986a; Center for Population Options, 1989; Sadker & Sadker, 1994).

Stress on gender role differentiation often increases at puberty. Also, peer influence often dominates during early adolescence. A result of this situation is a meaningful increase in pregnancies among teenage girls resulting in approximately 1 million adolescent girls becoming pregnant each year. Fifty percent of these pregnancies result in live births. This translates into one-fifth of all births in the United States in any given year. As many as 80% of adolescent mothers drop out of school and never return (Center for Population Options, 1989; Crooks & Baur, 1990; Parnell, 1994; Sadker & Sadker, 1994).

The long-term consequences of the differential timing of marriage and childbearing or childbearing alone may be the single best predictor of educational attainment by women. That is educational level predicts socioeconomic position, income, and occupation (Grindstaff, 1986; Parnell, 1994; Sadker & Sadker, 1994).

Theoretical Basis of Sex-Role Behavior

Choices leading to sex-role behavior can be explained from both biological and sociocultural perspectives. Genetics and hormones determine biological sex, and contribute to specific behavioral differences such as dominance and aggression in males and the reproductive capacity of females (Grusec & Lytton, 1988). Also, biological factors may influence certain skills such as mathematical ability and verbal ability (Spiel, 1997). However, cultural norms strongly mediate the development of gender-based roles. Various theoretical perspectives describe the processes that result in individuals behaving in sex role appropriate manners.

Freud (cited in Siegler, 1978) addressed gender identification and sex-role appropriate behaviors. He articulated a theory of psychosexual development in the early 1900s. He described the child's passing through four stages of psychosexual development, with a period of latency between the third and fourth stages. Stages were defined by the different parts of the body that provided sexual (libidinal) gratification throughout the early years of life. It is during Freud's phallic stage, that begins around the age of three years, that gender identification and the internalization of the same-sexed parent's sex role behaviors occur. According to Freud, during the phallic stage boys experience the Oedipus complex and girls experience the Electra complex. This results in children's identification with the like-sexed parent and the adoption of appropriate sex roles.

Later, contemporary theorists applied cognitive developmental theory, social learning theory, and gender scheme theory to the development of gender identity and adaptation to the sex-based division of roles (Festinger, 1957; Kohlberg, 1966; Martin & Halverson, 1981).

Gender identity may be conceptualized as a three stage process of gender labeling, gender stability, and gender constancy. Gender labeling occurs between 2-1/2 and 3 years of age. Children are able to accurately label their sex and that of others. However, the gender ascribed to others is dependent on superficial features such as clothes and hair. Children at this stage do not understand the permanency of gender differences.

Gender stability begins at about 3-1/2 years of age and lasts until children are about 5 years old. Children understand that gender is a relatively enduring characteristic. However, they still believe that gender can be changed by changing behavior or appearances. Between the ages of 5 and 7 years, children come to understand the permanence of their genders, that is, they develop gender constancy (Kohlberg, 1966).

Kohlberg, a proponent of the cognitive developmental theory of gender identity, asserted that children observe same sex models preferentially imitating them because they perceive them as being similar to themselves and because those behaviors are consistant with their self-concept and sexual self-identities. Kohlberg asserted that modeling can be effective only when sex-role categorization has taken place. That is, this can occur when gender constancy has been achieved (Kohlberg, 1966).

According to social learning theory (Grusec & Lytton, 1988) gender identity and sex-role appropriate behavior is primarily the result of observing social and cultural models and of the influences to which the child is exposed during early development. From birth, children are treated differently in a manner consistent with gender-role expectation (Sedney, 1987, cited in Grusec & Lytton, 1988). Parents model and reinforce those behaviors that the child comes to know as appropriate for one's sex. And, they often punish those behaviors that they consider inappropriate.

Schematic processing theory (Martin & Halverson, 1981) is based on the premise that young children learn a label for their gender from their environment. They begin to formulate stereotypic notions of what are masculine and feminine behaviors. From these notions, children develop gender schemes that they use to organize and guide their interpretations of gender-related behaviors. Children begin to attend to behavior that is consistent with their own gender labels. This results in their behaving in ways consistent with their own genders.

Congruent with schematic processing theory, Kagan and Moss (1962) articulated an anxiety reduction motive underlying sex-role appropriate behavior.

> Sex-role identification directs the selective adoption and maintenance of several behavior domains. The expression of aggression, competitiveness, passivity, dependency, or sexuality is determined, in part, by the individual's assessment of

> the congruence of the behavior with traditional sex-role standards. Many individuals are motivated to behave in a way that is congruent with a hypothetical ego ideal or idealized model that embodies the essential qualities of masculinity or femininity. This motive--like Festinger's (1957) construct of cognitive dissonance vs. consonance--locates both the goal state as well as the incentive conditions in the cognitive system of the individual rather than in the outside world. . . .
>
> Perhaps unique to humans is a need--to act and to believe in ways that are congruent with previously established standards. The incentive and goal stimuli for this motive are not always external events but evaluations of the match between a belief or proposed response and an internalized standard. . . . Any behavior or belief that increases the discrepancy between the individual's evaluation of himself and his idealized model provokes anxiety and is likely to be shunned; any behavior that decreases the discrepancy between the evaluation of self and model is rewarding and is likely to be practiced. (p. 281)

Erik Erikson conceptualized eight developmental stages based on biological and on psychosexual influences emphasizing social factors. Identity versus role confusion is Erikson's fifth stage. This occurs during adolescence, focused on the need to develop a sense of identity including reformulating psychosexual issues associated with sex-role appropriate behaviors (Liebert & Speigler, 1990).

There is evidence supporting an interaction between biological forces and cultural-environmental factors in the development of gender identity and the adoption of sex role appropriate behavior. Children begin to learn from their culture, almost from birth, what behaviors and beliefs are acceptable for people on the basis of sex. And, they become deeply embedded in one's identity. To behave inconsistently with these constructs arouses anxiety and, thus, avoided. Conversely, those models idealized are emulated.

Gender Role Self Concept and Career Development

Super (1957) studied the role of self-concept in career development and suggested that a career choice was a "search for an occupational identity--a striving for an occupational role that was consonant with one's self-image. . ." (Amatea, 1975, p. 6). Research supports the position that this theoretical perspective is applicable to females (Super, 1957). It is the relative importance of individuals' work to other possible life career roles, rather than sex, that determines its meaningfulness. The importance of work relative to other life roles is work salience. Sex role stereotyping is an important determinant of life career role preferences such as for homemaking (Bandura, 1986; Farmer, 1995).

Super (1957) described the relationship between sex-role self-concept and vocational identity in terms of a self-concept system. Vocational self-concept may be defined as the various self-concepts that are believed to be relevant to vocational choice and success. Thus, those aspects of an individual's sex-role identity and the choices that follow from them that meaningfully impact vocational choices. Their outcomes are of critical importance in career development (Super, Starishevsky, Matlin, & Jordaan, 1963).

According to Super and associates (1963), exploratory behavior characterizes the career tasks of the early adolescent. Epistemic knowledge, the understanding that problems have no single solution, but rather possibilities that are imperfect, is crucial in vocational exploration (Super et al., 1963). That is, the development of the ability to think about perplexing problems, ambiguous situations, and problems that confront the individual with contradictions and to develop solutions is important. This exploratory behavior may modify and shape adolescents thinking about themselves in the world and about one's self in relation to the world of work. Therefore, this epistemic knowledge is critical to all decision-making associated with those behaviors that meaningfully impact career implementation, including sex-role behaviors.

Female's Problem-Solving Self-Efficacy

A review of the literature on problem-solving abilities shows that females, in particular, evidence a lack of confidence in their decision-making abilities. Thus, they avoid problem-solving situations (Bremes & Johnson, 1989). Further, research supports differential socialization on the basis of gender in regard to developing problem-solving skills (Mullis & Mullis, 1986; Trepanier-Street & Romatowksi, 1986). These findings indicate that sex-role socialization of females may adversely affect women's confidence in their decision-making, and even in their willingness to make decisions.

According to self-efficacy theory "perceived self-efficacy is concerned with judgements of how well one can execute courses of action required to deal with prospective situations" (Bandura, 1982, p. 122). This in turn governs how one will behave. People avoid activities that they believe exceed their coping capacity, but undertake and perform assuredly those tasks that they judge themselves capable of managing (Bandura, 1982).

When experiencing difficulties people who doubt their abilities lower their efforts or give up trying to accomplish the task together. However, when they believe that they are competent, they will try harder to master the challenge.

Judgements about efficacy influence thoughts and emotional reactions when anticipating or participating in the environment. If the task is judged not to be within one's ability, she will dwell on personal deficiencies more than is appropriate. This creates stress and impaired performance and blocks problem solving. Conversely, when self-efficacy is high there is little stress and an approach is made to master the task.

Demographic Variables

North Carolina Youth Risk Behavior Survey, surveying 300,000 high school students, reported that African American girls were at greater risk of pregnancy than White girls. Twenty-eight percent of the respondents were African American, 65% were White, 1% were Hispanic Americans, and 5% were other. Of the students surveyed, 8 of 10 African American boys had also had sex. Fifteen percent of African American girls reported having becoming pregnant.

Poverty

According to Edelman's (1988) life options theory, teens become pregnant because they don't see other options available to them. They often live in poverty and lack academic skills. Early parenthood appears to be an attractive possibility. The solution is to get these adolescents to think about the consequences of their actions and to encourage academic development. Also, a goal is to to prepare them for work. Early parenthood may result in a lifetime of poverty for these mothers and their children creating a cycle of poverty and early parenthood.

Mother's Employment

When mothers are employed outside of the home, stereotypic gender roles and notions are less fixed and less stereotypic than when mothers do not work outside of the home. Daughters of employed women tend to become more career and achievement-oriented. They also have higher self esteem than do girls whose mothers are not employed outside of the home. This may in part be due to the father playing a different role within the family structure (Gold & Andres, 1978).

Statement of the Problem

Gender roles are learned from birth and are bound by cultural norms through the child's observations of how men and women behave differently. Thus, children develop notions of what is masculine or feminine. Traditionally, men almost exclusively were the wage earners and women's primary responsibilities were in the home (e.g., as wife or mother) and extending themselves to friends, relatives, and the community. Recent shifts in society altered the utility of this role, necessitating changes in the functions women fulfill in the family structure. This includes working outside of the home as wage earners. Unfortunately, sex role notions are deeply embedded in the self-concept system. And, to the adolescent without epistemic knowledge, sex-role appropriate behaviors are computable and knowable in absolute terms.

Early adolescence is a time of particular importance in the development of a career identity. It is also a time of increased stress on gender role differentiation when stereotypic sex role behaviors may be acted out as the child experiments.

The development of epistemic knowledge enhanced by learning decision-making skills is a critical component of career development for the adolescent, meaningfully influencing identity development. Epistemic knowledge and decision-making skills foster flexibility increasing awareness of the complexity of life's choices and of the values underlying them. Can such knowledge and decision-making skills be learned? And, if yes, how will it affect sex role attitudes and career values of early adolescent girls? Further, how will it affect their confidence and willingness to make decisions? This is the focus of this study.

Purpose

The purpose of this study is to investigate the effects of using a cognitive processing model on the career values and on the problem-solving self-efficacy of early adolescent females.

More specifically, in this study, the following questions are addressed:

1. What are the effects of using a cognitive processing model when applied to decision-making associated with sex-role behaviors that meaningfully affect the timing of future marriage, childbearing and the planning of education goals on career values of adolescent girls?

2. What are the effects of using a cognitive processing model when applied to decision-making associated with sex role behaviors that meaningfully affect the timing of marriage, childbearing, and the planning of educational goals on the problem-solving self-efficacy of adolescent girls?

3. What are the effects of demographic variables on attitudes toward career values and decision-making self efficacy when a cognitive processing model is applied to decision-making associated with sex-role behaviors that affect the timing of future marriage, of childbearing, and the planning of educational goals among early adolescent girls?

Need for the Study

The data from this study may contribute significantly to the development of vocational theories appropriate to the female population studied as well as assist in defining the applicability of currently applied career development theories to women. The findings may provide a research focus on the factors meaningful in the career development of women and in their successful implementation of careers.

In addition, the professional practice of educators may be enhanced by increased knowledge acquired regarding the career development needs of females. For example, school counselors' identifying appropriate goals for guidance programs, strategies selection, program development, identifying resources and activities may be improved. The results may also help teachers increase their sensitivity to the special needs of female students. Also, their choices of instructional strategies may be affected. Additionally, school administrators who have acquired such knowledge may be more likely to provide the necessary support for successful implementation of new programs and for making changes in currently implemented ones.

Hypotheses

H_1: There will be no statistically significant difference between the group mean career values posttest scores, as measured by The Attitude Toward Women Scale for Adolescents (Galambos, Petersen, Richards, & Gitelson, 1985), among the participants who receive the treatment and those in the control group.

H_2: There will be no statistically significant difference between the group mean problem-solving self-efficacy posttest scores, as measured by the Problem-solving Inventory Form B (Heppner, 1988), among the participants who receive the treatment and those in the control group.

H_3: There will be no statistically significant difference between participants who receive the treatment and the control group on the basis of demographics as measured by the Problem-solving Inventory Form B (1988).

Definition of Terms

Gender role behavior refers to culturally bound roles prescribed on the basis of sex.

Career tasks of early adolescence are the exploratory behaviors that allow the adolescent to develop a career choice or identity that is congruent with the emerging self-concept.

Cognitive processing model refers to specific structured strategies or steps applied to solving a problem.

Epistemic knowledge is an understanding that problems may have no correct solution, only better or worse ones, that knowing is influenced by one's frame of reference, and that reason and data are fallible--resulting in the awareness that a number of potential solutions are available for a problem and thus, have the right to be considered.

Gender identification is a three-stage process of gender labeling, gender stability, and gender constancy spanning ages 2-1/2 and 7 years.

Participants will be 8th-grade female students between 12-15 years of age.

Treatment in this study refers to a 4-hour program of large-group training using a cognitive processing model. The model was applied to decision-making in reference to sex-role behaviors associated with the success of career implementation. More specifically, those behaviors relevant to early adolescent females that may affect the timing of their future marriage, childbearing, and educational goal-setting and planning.

Work values are behaviors or goals that reflect one's attempts to satisfy needs through various life roles (Super et al., 1963).

Overview of the Remainder of the Paper

This dissertation consists of five chapters. Chapter 2 presents a review of the relevant literature associated with this study. Chapter 3 contains the methodology section, providing a listing relevant variables, defining the population studied, explaining the sampling procedures, and describing the instruments selected for use in this study. Chapter 4 includes the analysis of the data. Chapter 5 presents a summary of the findings, conclusions, limitations identified, and recommendations for further research, practice, and training.

CHAPTER 2
REVIEW OF THE RELEVANT LITERATURE

This section includes the cultural context of females' career development. Also included is a discussion of the issues related to early adolescent females' career development, the theoretical basis of gender-role behavior, and the cultural-environmental factors affecting sex roles, the role of gender-role self-concept in career development, the career development tasks of early adolescence, and related studies to career development interventions are included. Controversies in the literature, and the effect of gender role socialization on female problem-solving skills are covered.

Gender-Role Socialization

Gender-role socialization may lead to restricted career investigation and choice by women (Amatea, 1975; Amatea et al., 1982; Bandura, 1986b; Center for Population Options, 1989; Farmer, 1995; Haring-Hidore & Tyler, 1984; Holmes & Levin, 1982; Sadker & Sadker, 1994; Wearne, 1991). Specifically, attitudes toward compromising education for early marriage and childbearing or early childbearing appear to inhibit career implementation in contrast to postponing marriage and childbearing or childbearing until at least the age of 25, and furthering education/training beyond high school (Center for Population Options, 1989; Grindstaff, 1986; Sadker & Sadker, 1994). Selecting a life direction among females, including career planning, is frequently thought of in categorical and prescriptive ways consistent with prevailing sex role stereotypes in our culture (Bandura, 1986b; Farmer, 1995; Wearne, 1991). Established in the literature is a need for the development of early career guidance interventions focusing on the development of decision-making and planning skills and on values clarification. Specifically, this is in reference to sex-role behaviors that may inhibit career implementation among women.

Cultural Context

Marriage is normative in western cultures. Approximately 90% of individuals marry. Marriage marks a new life-cycle stage for a family developing new roles and relations that are clearly differentiated by sex (Center for Population Options, 1989; Parnell, 1994; Ram, 1984). Traditionally, a woman was responsible for creating a home, developing ties with extended family and friends, and for bearing and rearing children. The husband's role was that of bread winner and his position determined the family's social "status." "The earlier in life the marriage occurred, the more these roles seemed crystallized. Women had little opportunity or the need for education and training that could lead to well-paying or prestigious occupations" (Grindstaff, 1986, p. 22).

The sex-based division of labor evident in contemporary society may be understood by a dual explanation for its evolution. In investigating primitive societies, "hunting was done almost exclusively by men and grinding of grain was done mainly or exclusively by women" (D'Andrade, 1966, as quoted in Grusec & Lytton, 1988, p. 367).

The division of labor was primarily a result of women's capacity to bear and suckle offspring where parental care was almost exclusively assigned to women. Also, sex-linked characteristics (such as aggression) were associated with the men's manufacturing of weapons. Greater physical strength resulted in males engaging in activities requiring strenuous effort. Those sex-linked differences contributed to social prescriptions of sex role appropriate behaviors and continued to play a part in the development of traditionally accepted sex roles.

In contemporary society, conditions that necessitated traditional roles are less influential in determining roles on the basis of sex. In modern society, changes are evidenced to some extent by the dual worker family trend (Center for Population Options, 1989; Greenberg, 1993; Grusec & Lytton, 1988; Hayghe, 1989).

Further, with broad shifts in the economy increasing employment opportunities available to women, and with the rapid changes in family compositions in the United States increasing the proportion of single female-headed households, families have had little choice but to find new ways to fulfill family functions (Amatea et al., 1982; Bureau of the Census, 1986, 1989, 1991, 1992, 1993; Gysbers, 1984; Hayghe, 1989).

The family in western culture is undergoing a rapid change from the traditional family pattern in which a husband's role was that of breadwinner and the wife's role was that of mother, of child caretaker, and of nurturer of family ties to the dual career family with both partners working outside of the home and to the single female parent family arrangement (Center for Population Options, 1989; Hayghe, 1989; Hayghe & Johnson, 1976; Hershman, 1979; Johnson, 1979, cited in Amatea et al., 1982). With this shift, families have experienced more difficulties in meeting their needs including problems of role overload, conflicts between personal norms and social sanctions. Also, they have had difficulties merging personal sex-role definitions and career and family work roles with sociocultural definitions of what is intrinsically masculine or feminine (Amatea et al., 1982; Farmer, 1995). In particular, women tend to experience feelings of anger, of helplessness, and of alienation from their personal needs as a result of sex role conflict

(Kahn, 1989; Wearne, 1991). Further, single female-headed households, a rapidly increasing family composition arrangement, disproportionately share membership in the poverty class.

Webb (1981) identified the likely consequences of poverty class membership, including (a) poverty income, (b) high unemployment, (c) no savings, (d) family dysfunction, (e) high incidence of divorce, separation, and desertion of all social classes, (f) high rate of suicide of all social classes, (g) poor physical and mental health, lowest life expectancy, lowest reported satisfaction with life and work, and (h) high incidence of functional illiteracy.

Early Adolescent Female

Early adolescence marks the onset of many new developmental tasks. Among these are the development of a positive self-concept/identity, the establishment of appropriate peer relations, the achievement of greater values clarification, developing an understanding of oneself in relating to the opposite sex, and gaining responsibility for oneself in more abstract terms. These tasks are not new to adolescence. They exist in some form in childhood. Rather, tasks such as sex role identification and peer group consciousness reach ascendancy at this stage (Williams, 1971).

During adolescence developmental tasks are frequently seemingly in conflict with one another. Females may experience difficulty merging notions of how to attract a mate and aspire to a career (Bandura, 1986b; Center for Population Options, 1989; Farmer, 1995; Wearne, 1991). During adolescence, girls begin to focus on personal attractiveness in preparation for marriage where boys tend to focus on training for occupational attainment (Amatea et al., 1982; Sadker & Sadker, 1994). Girls may begin to define their identities in reference to their boyfriends status at school and it may extend to their academic achievements being seen as liability in attracting a boyfriend. Sexual permissiveness in society today has influenced teens expectations toward their sexual behaviors. They may feel pressured to engage in sexual intercourse in order to fulfill their stereotypic notions of maleness and femaleness (Crooks & Baur, 1990; Parnell, 1994).

Approximately 11 million adolescent girls are sexually active. An estimated 1 million become pregnant each year. Fifty percent of these pregnancies result in live births. This is approximately one-fifth of all births in the United States in any given year (Crook & Baur, 1990). An adolescent pregnancy has numerous serious adverse consequences such as pregnancy complications. Teen mothers have an increased likelihood of having offspring with physical, cognitive, and emotional problems, lower quality of parental care than older mothers, and young women who have limited educational and employment opportunities. As many as 80% of adolescent mothers drop out of school and never return (Center for Population Options, 1989; Felsman, Brannigan, & Yellin, 1987, cited in Crook & Baur, 1990; Parnell, 1994; Sadker & Sadker, 1994).

Grindstaff (1986) studied the long-term consequences of differential timing in marriage and the onset of childbearing of women at the age of 30. He identified, in modern industrial society, the level of completed formal education as probably the single most important predictor of socioeconomic position, particularly income and occupation (Center for Population Options, 1989; Duncan et al., 1972, cited in Grindstaff, 1986; Parnell, 1994). Based on data from 200,000 women, Grindstaff found

> educational attainment for women especially as that attainment relates to education at a university level, was influenced by her age at marriage and the timing of the onset of childbearing. The earlier a marriage takes place in the life of a woman, and the earlier she begins her childbearing, the lower her formal educational achievement.
>
> This research indicates that if women want to achieve high educational goals, early marriage and childbearing are detrimental to the goal attainment. It would appear that delaying marriage and childbearing until after adolescence, and probably until the woman is 25 years of age, would be. (Presser, 1980, cited in Grindstaff, 1986, p. 31)

Patterson (1973, cited in Haring-Hidore & Beyard-Tyler, 1984, p. 128) concluded that "socialization can be the most important limitation in career development with adolescent girls. This is true when girls restrict their choices to traditional occupations, as well as when they consider homemaking only or regard choosing an occupation as subordinate to finding a mate."

These findings were supported by those of Fitzgerald and Crites (1980). Their review of the literature indicated that sex role socialization may meaningfully restrict career investigation and choice by women (Bandura, 1986a; Farmer, 1995; Wearne, 1991). Further, in 1977, Hoffman (cited in Fitzgerald & Crites, 1980) reported that women are expected to be mothers and men are expected to be workers. Girls who are reinforced for being competent in domestic tasks and for winning love (rather than for achieving academic success) often choose careers below their ability levels (Center for Population Options, 1989; Sadker & Sadker, 1994).

Amatea and associates (1982) researched adolescent girls' perception of reality factors in lifestyle choices, and found that

> today's adolescent females do not expect to fully adapt to the traditional role of full-time wife and mother, they are less certain as to how to pursue their other options. Students have difficulty in thinking in a futuristic manner about the

> realities of implementing a career. They seem to have no sense of "how" that choice will be implemented.

Amatea and associates (1982) described "the job adolescents face in choosing life goals that comfortably interface with their sex-role beliefs and. These goals are frequently dealt with in a categorical and prescriptive ways. Students perceive knowledge about alternative lifestyles or choices as good/bad, right/wrong. Lifestyle choices are frequently thought of in either/or terms (Center for Population Options, 1989; Farmer, 1995; Wearne, 1991). To be feminine and attractive or masculine and competent is to act in certain ways.

Theoretical Basis of Gender Role Appropriate Behavior

Sex refers to one's biological maleness or femaleness. In contrast, gender includes not only biological sex, but also the psychosocial meanings of what it is to be a male or a female. More specifically, gender refers to what is meant to be masculine or to be feminine. One's gender identity is the subjective sense of being a male or a female. And, gender roles or sex roles are those attitudes and behaviors that are considered normal and appropriate in a culture for each sex. Specific gender role expectations are culturally bound and are era-dependent (Center for Population Options, 1989; Crooks & Baur, 1990; Farmer, 1995).

Some theorists have emphasized the role of biology in the acquisition of gender identity and in the development of sex role behaviors (Inglis, Ruckman, Lawson, MacLean, & Monga, 1982, cited in Crooks & Baur, 1990; McGlone, 1978, cited in Crooks & Baur, 1990). In contrast, others (Barkley, Ullman, Lori, & Brecht, 1977; Blakemore, LaRue, & Olejnik, 1979; Freud, 1905, cited in Grusec & Lytton, 1988; Kohlberg, 1966, cited in Grusec & Lytton, 1988; Martin & Haulerson, 1981; Mussen &

Distler, 1960; Mussen & Rutherford, 1963; Perry, White, & Perry, 1984; Sidney, 1987, cited in Grusec & Lytton, 1988; Spiel, 1997; White, 1978) believe that learning is more critical in their development (Center for Population Options, 1989). Yet, others view biological factors and social learning influences to be inextricably linked (Archer & Lloyd, 1985; Hyde, 1985, cited in Crooks & Baur, 1990).

Individuals supporting the influence of biological sex on gender identity generally focus on the genetic and hormonal mechanisms that give rise to prenatal sexual differentiation. This process occurs at six different levels including chromosomal sex, gonadal sex, hormonal sex, sex of the internal reproductive structures, sex of the external genitals, and sex differentiation of the brain. Basically, under normal circumstances, these levels coordinate to determine one's biological sex (Grusec & Lytton, 1988).

Interestingly, sex differentiation of the brain during prenatal development is thought to contribute to specific behavioral differences in males and in females, in particular dominance and greater aggression in males than in females (Grusec & Lytton, 1988; Spiel, 1997).

Sex differences in the structure of the cerebral hemispheres may also be a biological factor in differences in certain skills of males and of females. That girls are superior in verbal abilities--in vocabulary, fluency, anagrams, or reading--is one of the more solidly established facts in the area of sex differences.

And, "the average level of mathematical ability, is higher in boys than in girls, at least from early adolescence on. This exists when the groups are equated for the number of mathematics courses they have taken.

Sex differentiation of the brain has also been found in animal studies (Beatty, 1979; Diamond, 1979, cited in Crooks & Baur, 1990). And, studies of humans who suffered brain damage have evidenced sex differences in the degree of hemispheric specialization (Crooks & Baur, 1990; Inglis, Ruckman, Lawson, MacLean, & Monga, 1982). In most people, the brain's left hemisphere is generally responsible for language functions and the right hemisphere is for spatial tasks.

These differences, among others, may be due, in part, to psychosocial factors (Archer & Lloyd, 1985; Bandura, 1986b; Crooks and Baur, 1990). Simply put, socialization refers to the processes by which a culture induces its values, its moral norms, and its expectations in its members. Among these expectations are notions of sex-role appropriate behaviors and attitudes (Center for Population Options, 1989, Farmer, 1995; Wearne, 1991). Various theoretical perspectives describe the processes that result in individuals behaving in a sex role appropriate fashion differently.

Sigmund Freud (1905, cited in Grusec & Lytton, 1988) articulated a theory of psychosexual development in the early 1900s. Basically, he described the child's passing through four stages of psychosexual development with a period of latency between the third stage and the fourth stage. Stages were defined by the different parts of the body that provided sexual (libidinal) gratification throughout the early years of life.

Each stage is characterized by particular conflicts the child faces between inner desires and societal constraints. Adequate gratification of needs at each stage is necessary for healthy adult adjustment. Unresolved conflicts results in specific personality characteristics in adulthood. It is during Freud's phallic stage, that begins around the age of three, that gender identification and the internalization of the like sexed parent's sex role behaviors occur.

According to Freud, during the phallic stage boys experience the Oedipus complex and girls experience the Electra complex, resulting in children's identification with the like-sexed parent and the adoption of appropriate sex roles. For a boy, there is a rivalry with his father for his mother's (sexual) affection. Out of a fear of castration with the aggressor, the boy identifies with his father and becomes like what he perceives his father to be like and internalizes societal values as does his father.

For girls, the mother is seen as a rival for her father's sexual interest. Fearing the mother's rejection the girl identifies with her mother and, thus, assumes her appropriate sex role. Girls are thought to be less strongly sex-typed than boys due to their identification being based on love from the mother rather than a fear of castration (Freud, 1905, cited in Grusec & Lytton, 1988).

Interestingly, research findings indicate that masculinity in boys is not directly associated with a father's masculinity. Rather, a strong masculine identity in boys is associated with fathers who demonstrate nurturance and who are perceived as rewarding role models (Mussen & Distler, 1960; Mussen & Rutherford, 1963). Further, femininity in girls is associated with nurturance from both parents, and with mothers who are competent and effective role models (Mussen & Rutherford, 1963).

Principally, three contemporary theoretical perspectives may be cited that attempt to explain the acquisition of gender identity and the adoption of appropriate sex role behaviors and attitudes: Social learning theory, cognitive-developmental theory, and gender scheme theory.

Gender identity may be conceptualized as a three stage process of gender labeling, gender stability, and gender constancy. Gender labeling occurs between 2-1/2 to 3 years of age. Children are able to accurately label their sex and that of others. However, the sex ascribed to others is dependent on superficial features such as clothes and hair. Children at this stage do not understand the permanent quality of sex.

Gender stability begins at about 3-1/2 years of age and lasts until children are about 5 years old. Children understand that sex is a relatively enduring characteristic. However, they still believe that one's sex can be changed by changing behavior or appearances. Between the ages of 5 and 7, children come to understand the permanence of sex, that is, gender constancy (Kohlberg, 1966). Kohlberg asserted that children imitate same-sexed models preferentially only after gender constancy has been achieved.

However, the notion that certain behaviors are appropriate for boys and others are for girls is evident by age 2 to 3 (Blakemore, LaRue, & Olejnik, 1979; Perry, White, & Perry, 1984). Accounting for this finding, social learning theory indicates that gender identity and sex role appropriate behavior is primarily the result of observing social and cultural models and of the influences to which the child is exposed during early development. Parents model and reinforce those behaviors that the child comes to know as appropriate for one's sex and they punish those behaviors that they consider inappropriate. "Social learning theory and cognitive developmental theory both hypothesize that sex-appropriate behavior originates in the following sequence:
(a) children observe behavior, (b) based on this observation they acquire notions of sex stereotypes, and (c) they imitate and adopt sex-appropriate behavior preferentially" (Grusec & Lytton, p. 397, 1988).

However, there is evidence that indicates that it is the child's perception of the sex-appropriateness of behavior rather than the sex of the model that is the more important factor for imitation (Barkley, Ullman, Zori, & Brecht, 1977; White, 1978).

Schematic processing theory of sex role development (Martin & Haulerson, 1981) provides an explanation for these findings. From the environment, young children learn a label for their gender. Also, they begin to formulate stereotypic notions of what is masculine and what is feminine behavior. From these notions, children develop gender schemes that are, basically, generalized knowledge structures that children use to organize and guide their interpretations of gender related behaviors. Children begin to attend to behavior that is consistent with their own gender label resulting in their behaving in ways consistent with their own gender label. The environment is important in helping children label their gender and sex appropriate behaviors. It may be predicted that children (and parents) would pay attention to information that is consistent with their gender schemes and distort information that is inconsistent or incongruent with their gender. Festinger's (1957) theory of cognitive dissonance may serve to explain this phenomenon.

To summarize, according to Festinger (1957), the individual tries to achieve consistency within himself. One's attitudes, tend to exist in clusters that are internally consistent. When inconsistencies occur, attempts are made to rationalize them. Attempts to achieve consistency may fail. The inconsistency then simply continues to exist. Under such circumstances there is psychological discomfort (Festinger, 1957). These inconsistencies may be termed dissonance and the word consistency may be termed consonance. According to Festinger (1957), (a) dissonance will motivate the person to reduce the dissonance and achieve consonance and (b) the person will actively avoid situations and information which would likely increase the dissonance. Dissonance could rise from logical inconsistency because of cultural mores.

Theoretically, as soon as dissonance occurs, there will be pressures to reduce it. The strength of the pressures to reduce the dissonance is a function of the magnitude of the dissonance. All dissonant relations, of course, are not of equal magnitude.

Similar to the action of a drive, the greater the dissonance, the greater will be the intensity of the action to reduce the dissonance and the greater the avoidance of situation that would increase the dissonance. In general, if dissonance exists between two elements, this dissonance can be eliminated by changing one of those elements.

Festinger (1957) described three ways in which this may be done:

> 1. Changing a behavioral cognitive element;.
> 2. Changing an environmental cognitive, or;
> 3. Adding new cognitive. (p. 20)

But, the person may encounter difficulties in trying to change either her behavior or her knowledge or her environment. The first and foremost source of resistance to change for any behavioral cognitive element is the response of such elements to reality.

The situation is somewhat different with regard to environmental elements. When there is a clear and unequivocal reality corresponding to some cognitive element, the possibilities of change are almost nil (Festinger, 1957).

The individual is motivated to behave in ways that are congruent with his or her idealized notions of those qualities that represent masculinity or femininity. This motive, according to Kagan and Moss (1962), can be defined in terms of Festinger's (1957) constructs of cognitive dissonance and consonance. The motive is in the cognitive system. As the child develops schemes of role appropriate behavior on the basis of sex, there is an evaluation of the match between that internalized standard and the proposed belief or response. The more congruent the proposed behavior or belief with the idealized model the less anxiety aroused and the greater the probability of its occurrence.

There is evidence supporting a complex interaction between biological forces and cultural-environmental factors in the development of gender identity and in the engagement of gender role appropriate behavior. Children begin to learn from their culture almost from birth those behaviors acceptable for people on the basis of sex. These notions become deeply embedded in one's identity. To behave inconsistently with these constructs arouses anxiety and, thus, is to be avoided. Conversely, those models idealized are emulated. Among adolescents, prevailing norms, tend to be stereotypic or polarized. By late adolescence, these notions are often viewed in categorical and prescriptive ways. Broadly, adolescent females make choices that compromise their educational and career opportunities in search of an identity consistent with their perception of our sociocultural "ideal woman."

Specifically, young teens are feeling pressured to make decisions and to take responsibility for engaging in sexual behavior. Girls, in particular, seeking peer approval and love are ever increasingly making the decision to have sexual relations without consideration for the consequences, resulting in an epidemic of teen pregnancies. The literature indicates that the consequences are devastating in terms of life-chance for those mothers and for their children.

Cultural-Environmental Factors Affecting Gender Role-Appropriate Behavior

Gender-based stereotypic notions prevailing in our society today about men are that they are logical, unemotional, independent, objective, and competent. In contrast, women are viewed, stereotypically, as passive, illogical, emotional, dependent, and subordinate (Doyle, 1985; Pryor & Knupfer, 1997; Sadker & Sadker, 1994).

Parents, peers, schools, textbooks, and television contribute to the socialization of gender roles (Pryor & Knupfer, 1997; Sadker & Sadker, 1994). Parents' expectations for boys and girls are typically stereotypical, desiring occupational and career success for boys and to be unselfish, to be loving, to be attractive, and to be well-mannered for girls (Hoffman & Saltzstein, 1967). However, when mothers are employed outside the home those notions are less fixed and less stereotypical than when mothers do not work outside of the home among children. Daughters of employed women tend to be more career and achievement oriented and have higher self esteem than girls whose mother's are not employed outside of the home. This may in part be due to the relative earning capacity of both parents providing a different role for the father within the family structure (Gold & Andres, 1978b). Particularly, during adolescence, the peer group has a dominant influence on teens' notions of gender-appropriate behavior. One notion widely held among adolescents is that "one cannot be both feminine and an achiever" (Crooks & Baur, 1990, p. 86; Farmer, 1995). Teachers' responses to their students may be influenced by their gender role appropriate notions (Rogers, 1987; Sadker & Sadker, 1994). And, students are often reinforced for tasks differentially on the basis of sex stereotypes (Crooks & Baur, 1990; Sadker & Sadker, 1994).

Numerous investigations of children's textbooks have found extreme gender-role stereotypes in books used from 1958-1982 depicting girls as dependent, fearful, followers, and unrealistic. Boys were portrayed as clever, independent, successful, good problem-solvers, and in charge of their fates. Surprisingly, even texts used from 1980-1989 most frequently portrayed women in the career role of full-time, stay-at-home mother and wife (Center for Population Options, 1989; Crooks & Baur, 1990, Sadker & Sadker, 1994).

Television often portrays men and women in extreme stereotyped gender roles. Women are commonly shown as passive, as unintelligent, and as seductive sex objects who are often domestically inclined. Men are portrayed often, as intelligent, as competent, and as being in charge (Center for Population Options, 1989; Crooks & Baur, 1990; Sadker & Sadker, 1994).

Gender-Role Self-Concept and Career Development

Broadly, Super (1957) studied the role of self-concept in career development, and suggested that a career choice was a "search for an occupational identity--a striving for an occupational role that was consonant with one's self-image. . . . This self-concept appears to be formed, for the most part, during early childhood and adolescence. . . through the process of role modeling" (Amatea, 1975, p. 6).

Research supports the position that this theoretical perspective is applicable to females (Super et al., 1963). It is the relative importance of work to individuals to other possible life career roles rather than sex that determines its meaningfulness. The importance of work relative to other life roles is work salience.

Super (1957) postulated that "work and occupation provide a focus for personality organization for most men and many women, although for some persons this focus is peripheral, incidental, or even nonexistent, and other foci such as leisure activities and homemaking are central" (pp. 11-12). Sex role stereotyping is an important determinant of life career role preferences such as for homemaking (Bandura, 1986; Center for Population Options, 1989; Farmer, 1995).

Super and associates (1963) described the relationship between the sex role self-concept and one's vocational identity in terms of a self-concept system. Self-percepts are the impressions one receives from the environment about his or herself. As percepts are related to other percepts they take on meaning. Relatedly, the percepts are self-concepts.

A self-concept is a meaningful perception of one's self generally in "some role, some situation, in a position, performing some set of functions, or in some web of relationships" (p. 18). The self-concept system is comprised of all of one's self-concepts.

Vocational self-concepts may be defined as "the various self-concepts which are believed to be relevant to vocational choice and success. (That is) . . . vocational self-concept denotes the constellation of self-attributes which the individual considers vocationally relevant" (Super et al., 1963, p. 19). Thus, an individual's gender role percepts that meaningfully impact one's vocational choices and those behaviors associated with career success are of critical importance in career development and to the thesis of this research (Farmer, 1995).

Career-Development Tasks of Early Adolescence

Erik Erikson believed there are eight critical developmental issues that span one's lifetime. An alternative to Freud's psychosexual stage theory, Erikson's stages were conceptualized as psychosocial in nature. That is, biological and psychosexual influences were acknowledged, however, social factors were emphasized. Identity versus Role Confusion, Erikson's fifth stage occurs during adolescence. Broadly, it is marked by a need to develop a sense of identity. "The selection of an occupation or career is particularly important for identity. If an identity is not formed, role confusion may occur; it is characterized by an inability to select a career or to further educational goals (Center for Population Options, 1989; Liebert & Spiegler, 1990). Ausubel, in 1963 (cited in Super et al., 1963), described the ego crisis of adolescence as a period of developmental disequilibrium during which the individual "exchanges derived status for primary status developing feelings of adequacy and worth in adult terms. These developments occur via exploration allowing the adolescent opportunities to make choices and decisions" (Super et al., 1963, p. 42). Berlyne, described three types of exploratory responses: orienting responses, investigatory responses, and epistemic responses. The first two types of responses deal with gathering simple sensory data, where epistemic responses deal with processing symbolic material. Epistemic responses are associated with perplexing problems, ambiguous situations or any situation giving rise to uncertainty or conflict or both.

Exploratory behavior, it may be suggested, not only may modify, but also shapes one's thinking about his or herself and about one's self in relation to the world or work (Super et al., 1963). These processes may be most effective when one is not deeply invested in a perspective that serves to enable oneself to maintain one's idealized self-image. Some self beliefs and hypotheses are unrealistic and are strongly held, while others are weakly held or realistic (Super et al., 1963).

In summary, the family in western culture is undergoing a rapid change. The traditional family pattern in which a husband's role was that of breadwinner and the wife's that of mother, of child caretaker, and of nurturer of family ties is shifting to the dual career family with both partners working outside of the home and to the single female-headed household arrangement (Greenberger, 1993; Hayghe & Johnson, 1976; Hershman, 1979; Johnson, 1979, cited in Amatea et al., 1982; Parnell, 1994). With this shift, women have experienced problems of poverty, of role overload, and of role conflict (Amatea et al., 1982). As a result, women may tend to experience feelings of anger, helplessness, and alienation from their personal needs (Kahn, 1989).

Gender role identification, an adaptation of one's perception of socially appropriate roles for one's own gender (Center for Population Options, 1989; Festinger, 1957; Kagan & Moss, 1962) is evident in young children (Holmes & Levin, 1982) and by late adolescence is rather rigidly and stereotypically entrenched (Center for Population Options, 1989; Farmer, 1995; Uberg, 1978, cited in Amatea, Clark, & Cross, 1982).

Gender role socialization may lead to restricted career investigation and choice by women (Amatea, 1975; Amatea et al., 1982; Center for Population Options, 1989; Farmer, 1995; Haring-Hidore & Tyler, 1984; Holmes & Levin, 1982; Sadker & Sadker, 1994). Selecting a life direction, including career planning, is frequently thought of in categorical and prescriptive ways. Specifically, young women's attitudes toward compromising education for early marriage and childbearing or behaviors leading to early childbearing in our culture appear to inhibit career implementation in contrast to postponing marriage and childbearing or childbearing, until at least the age of 25 and furthering education/training beyond high school (Grindstaff, 1986). There is a clear need for the development of early career guidance interventions focusing on the development of decision-making and planning skills and on values clarification, specifically, in reference to sex role behaviors that may inhibit career implementation among women.

Related Studies

Bigler and Liben (1990) studied the effects of a cognitive procedural model based on cognitive-developmental theory. Elementary school-age children were taught decision rules about occupational sorting on the basis of interest and on skills rather than on the basis of gender to reduce occupational stereotyping. Their rationale was based on the findings from research on gender-schematic processing that indicated that when children are exposed to counter stereotypic information, they forget or distort the material and on the findings indicating limited effects of interventions where children were exposed to counter stereotypic information to reduce stereotyping. The results of this study supported rule practice to reduce the inflexibility of highly stereotyped children's attitudes about occupational roles and toward other activities. These data support the efficacy of treatments based on cognitive procedural strategies to be used in this study.

Amatea et al. (1982b) developed a classroom-based intervention to address the life roles, planning, and values clarification needs of (late) adolescent high school and of college age students. The nine, 50-minute sessions in the high school program included activities to foster both cognitive and affective learning. Included among them were decision-making strategies and goal setting processes (epistemic knowledge skill development) involved in vocational and avocational planning to help students integrate career and personal life plans.

Gerken, Reardon, and Bash (1988), following the work of Amatea et al. (1982b), developed a similar semester-long program for college students. In particular, based on Maslow's need theory (Maslow, 1954, cited in Gerken et al., 1988) a treatment common to both studies (activities were somewhat different) was implemented exposing the students to a set of scenarios that had no right solutions depicting various dilemmas that face many couples or individuals trying to balance career and personal lives (Gerken et al., 1988, p. 272). The activities necessitated the use of epistemic knowledge skills, and of the clarification of values in reference to life choices.

This particular strategy is defined as exploratory behavior (Super et al, 1963) that is a necessary developmental task in the career development of adolescents beginning at about the age of 12. More specifically, epistemic responses are crucial in vocation exploration and decision-making. Further, it is epistemic knowledge that is most critical to all decision-making associated with those behaviors that meaningfully impact career implementation, including sex role behavior. Broadly, the findings of the overall programs indicated that students successfully gained an understanding of the role of family responsibilities and dual career issues in career planning.

There is controversy revealed in the literature in reference to the developmental period of epistemic knowledge. As noted, this knowledge is critical to career development and to the practical decision-making involved in everyday life. On the one hand, it is believed that children and early adolescents make certain assumptions about the world that prohibit the development of this critical thinking style (Labouvie-Vief, 1982). And, it is not until the child's assumptions about the way the world operates change, that the child is capable of developing epistemic knowledge skills. This perspective is supported by observations as found in the literature, of shifts in the application of epistemic knowledge that begin during late adolescence and continue through early adulthood, that clearly are absent in early adolescence.

In contrast to this point of view, many believe that those observations represent adolescents' ever-increasing experience with reality factors. Further, they believe that this cognitive style can be enhanced as early as late childhood or early adolescence, with structured practice solving real life problems (Garafalo & Lester, 1985; Flavell, 1976).

Further, Garafalo and Lester (1985) pointed out that "strategic behaviors take time to master and that novices need to develop the monitoring and assessing skills required to use them efficiently." Strategic behaviors include understanding the nature of a task or problem, planning courses of action, selecting appropriate strategies to carry out plans, monitoring execution activities while implementing strategies, evaluating the outcomes of strategies and plans, and, when necessary, revising or abandoning nonproductive strategies and plans.

In an extensive review of the literature, Manning (1974) reported that "general problem solving ability has been investigated as metacognitive strategies (Brown, 1978; Brown & DeLoache, 1978; Flavell, 1976). Meichenbaum (1976) reviewed how self-regulating speech-to-self can change behavior and thinking styles. Meichenbaum and Goodman (1979) concluded that teaching children how to talk to themselves, and altering the content of speech-to-self in terms of both the self-statements and images, influenced the child's behavior and thinking style. Further, Meichenbaum (1977) explained that the self-instructions helped to bring behaviors under control because the forced mediation increased the distance between stimuli and responses; and, therefore, provided additional opportunity for interrupting the behavioral sequence. This separation between task presentation (stimulus) and performance (response) gave the child time to be more reflective and act in a more meaningful, controlled manner. Thus, research findings illustrate a tie between metacognitive self-communication and (a) memory, (b) comprehension, (c) general problem solving, and (d) behavior/thinking styles.

Simply put, metacognitive strategies involve becoming more acquainted with oneself as a thinker. It is important to understand that speech-to-self can have a regulatory effect upon actions. Therefore, becoming more aware of oneself as a thinker can be operationalized by statements and questions-to-self" (Brown & DeLoache, 1978, cited in Siegler, 1978, p. 334).

Specifically, "when students learn to question themselves about their thinking at least two things may occur: (a) they become more aware of their thinking and (b) their speech-to-self contributes to the choice of action they will take. Thus, metacognitive strategies involve awareness of oneself as a thinker, and regulation of one's actions through speech-to-self" (Manning, 1974, p. 44).

Kitchener (1993) proposed a three-level model of cognitive processing to account for complex monitoring when individuals are faced with ill-structured problems. That is problems on which opposing or contradictory evidence and opinion exists. At the first level, cognition, individuals compute, memorize, read, perceive, solve structured problems, etc. At the second, metacognitive level, individuals monitor their own progress when they are engaged in these first-order tasks. At the third level, epistemic cognition, individuals reflect on the limits of knowing, the certainty of knowing, and criteria of knowing. Epistemic assumptions influence how individuals understand the nature of problems and decide how to solve them (Kitchener, 1993). Only when we introduce a higher level of monitoring, a meta-metacognitive level of monitoring, can we understand how, for example, adults monitor their problem-solving when they are engaged in the complex decision making of everyday life. This meta-meta level of cognitive monitoring has to do with knowing about knowing in the epistemic sense.

Kitchener (1993) clarified the position on puzzles and ill-structured problems. He stated that they differ in their epistemic nature (i.e., in the ways they are knowable) and in the decision-making process required to solve them (Churchman, 1971; Mitroff & Sagasti, 1973).

A puzzle is a well-structured problem. In contrast, the problems of everyday life are ill-structured. Churchman (1971) defines ill-structured problems as having different and opposing assumptions underlie each side.

This means making judgments about arguments and evidence on what may be opposing sides of the issue. This requires developing and arguing for a reasonable solution (Toulmin et al., 1979). An individual may understand that a problem does not always have absolute and correct solutions. Individuals having these assumptions can allow for both puzzles and ill-structured problems. Investigators believe that changes in assumptions about knowledge in the epistemic sense underlie the ability of adults to deal with conflicting ideas and systems in considering issues.

During the past 10 years, reviewing the literature, investigators differ in their conceptualization of the underlying processes and of the exact nature and number of shifts that occur. They agree that adolescents being to formulate epistemic assumptions and that these assumptions develop and shift in the young adult years.

Labouvie-Vief (1982) found "the epistemic framework of early adolescents assumes knowledge is absolute and truth is effectively computable" (p. 51). This suggests that while cognitive and metacognitive processes emerge in children, epistemic cognition (may) emerge in late adolescence, although its form may change in the adult years.

However, Piaget (1963, cited in Galvin, 1983, pp. 130-131) differentiated the developmental stages that he called concrete and formal operations according to a child's ability to perform a number of logical tasks. A child at concrete operations makes hypotheses infrequently and only for simple situations. Most of his and her if/then statements are simple reports of what has been found. A child at formal operations makes hypotheses more frequently, thinking about possible solutions before testing them out: In other words, thought begins to precede action.

According to Piaget, a child at concrete operations often finds difficulty in separating the effects of two or more variables and is not systematic in combining variables except in the most simple situations. A child at formal operations is able to separate variables with less difficulty, although he or she may still be unable to do so in complex situations. The formal child is generally more systematic in both separating and combining variables.

In drawing conclusions and making generalizations, the concrete child is satisfied when he or she has solved a particular problem and is unlikely to try to extract any general principle from it. The formal child is more likely to deduce a general principle as an explanation of his or her solution and may arrive at conclusions by considering abstract relations as well as concrete solutions (Piaget, 1963, cited in Galvin, 1983).

Finally, in thinking about abstractions, the concrete child can reason logically but depends on information from his or her sense. If the child has not had direct experiences with a situation, he or she is unlikely to be able to reason about it. Although the formal child may still prefer to think about and deal with concrete material, a gradually developing ability to manipulate mentally--that is, to reason--makes it appearance. Thus, theoretically, the transition from concrete operations to formal operations appears to mark the earliest point at which metacognitive problem-solving strategies in reference to illstructured situations including sex role behaviors that may inhibit career implementation can be successfully developed (Piaget, 1963, cited in Galvin, 1983).

Brown (1983) found that 5th through 8th grade students' thinking and problem-solving skills (when solving ill-structured problems) improve through instruction and practice. Brown (1983) further suggested the need for providing direct instruction in problem-solving (of ill-structured problems) by providing a framework for thinking about problems. His model, derived from an earlier work of David Elkind, is a simple four-step process: (a) define the problem, (b) consider alternative solutions, (c) evaluate the effectiveness of the alternatives selected, and (d) decide what to do.

Females' Problem-Solving Ability

Mullis and Mullis (1986) studies the role of parents in 9- to 12-year-old children's problem-solving skill development. In a review of the literature, the researchers found that the contributions of mothers and of fathers to their children's verbal problem-solving skills vary as a function of the child's sex. Mullis and Mullis (1986) found that, among 43 families studied, boys produced more problem-solving behaviors than girls in interactions with parents. These results support the views that parent-child interaction effects children's problem-solving abilities.

Trepanier-Street and Romatowski (1986) studied problem-solving self-concept in children in grades 1-2, 3-4, and 5-6. Children's creative writing was studied in reference to gender and age. Boys at all grade levels described male figures as more physically active and as problem-solvers, where young girls made similar assignments to male characters including being problem solvers.

Fifth- to 6th-grade girls described female characters as being more active and as being problem-solvers. This author suggested that the females' assignment of more active roles to same sex characters in grades 5 and 6 may reflect the young adolescent's developing sense of identity (Erikson, 1963) and to increased self-awareness.

Bremes and Johnson (1989) found that boys tend to have a more positive sense of problem solving self-efficacy than females and are more likely to approach rather than avoid problem solving situations suggesting that maleness is a mediator for positive self appraisal of problem solving ability.

These findings on females' problem-solving abilities indicate that the sex role socialization of females in our culture may adversely effect women's confidence in their decision-making and their willingness to make decisions. Thus, girls may have a special educational need to develop cognitive strategies that will aid in their developing confidence in and their use of decision-making strategies.

According to Bandura's theory of self-efficacy, self referent thought mediates one's thoughts and actions. Perceived self-efficacy is a significant determinant of performance operating independently of skills (Bandura, 1986b).

To function well it takes both skill and positive self beliefs of efficacy. Perceived self-efficacy is defined as peoples judgements of their capabilities to organize and execute courses of action required to attain designated types of performances (Bandura, 1986b, p. 391). That is perceived self-efficacy is a judgement of one's ability to accomplish a certain task and how well it will be performed. Self-efficacy mediates one's willingness to attempt accomplishing a given task. People tend to avoid situations they believe are too difficult for them to accomplish well. Conversely, people approach tasks they believe are within their ability. Those activities they perceive with high self-efficacy are practiced and those with poor self-efficacy are not. They get better at tasks they perceive they can handle well and don't improve at tasks that are perceived with poor self-efficacy. Thus, faulty self-perceptions of poor self-efficacy cannot be corrected by attempts to perform their associated tasks. The higher one's perceived self-efficacy the more one will try and persist at a task. With low self-efficacy where one has self doubt about her ability, she will give up and not continue trying if a task is difficult, thus, is personally limiting. Further, when filled with doubt, one exaggerates his and her inability undermining what ability one does have.

In summary, metacognition, an awareness and control over cognitive processes, may be conceptualized systematically in relation to decision-making (Brown, 1978; Brown & DeLoache, 1978; Flavell, 1976; Manning, 1974).

Problems of daily life may be referred to as ill structured problems usually involving differing and opposing underlying assumptions to which a correct solution is not absolute. Rather, the process of reaching a solution requires making judgments about conflicting arguments and evidence and considering alternative possible solutions by assessing their relative validity and fruitfulness as a solution (Dewey, 1938; Jordan, 1963; King & Kitchener, 1993).

There has been controversy in regard to the developmental period in which the ability to process ill structured problems occurs (King & Kitchener, 1993). Clearly, these processes are observed in older adolescents and in adults (King & Kitchener, 1993). Early adolescents were found to assume knowledge is absolute and truth is computable, thus, lacking the examination of alternative solutions in their problem solving processes. However, with structured practice in solving ill-structured problems, children in late childhood to early adolescence have been found to successfully define ill-structured problems, generate alternative hypothetical solutions, consider alternative outcomes and select solutions (Brown, 1983). Further, developmentally, a child at formal operations makes hypotheses, thinks about solutions before testing them out and reasoning makes its appearance (Galvin, 1983). Thus, theoretically, the transition from concrete operations to formal operations appears to mark the earliest point at which systematic problem solving skills in reference to those sex role behaviors that may inhibit career implementation can be successfully developed. Girls, perhaps due to socialization, evidence less confidence in problem solving ability.

Thus, there is a clear need for and support for early vocational guidance interventions in cognitive problem solving and planning skills, specifically in reference to sex role behaviors that may inhibit career implementation, particularly among women, And it appears that these skills may successfully acquired as early as the ages of 12-14.

Closely Related Research Results

In the early 1990s a pilot study was undertaken to investigate the career-related sex role attitudes of early adolescent females and the effects of a systematic cognitive processing model on those attitudes. Specifically, a decision-making model was developed based on Brown's (1983) findings with elementary school children. The model was applied to the treatment Amatea and colleagues (1982) developed that posed conflictual scenarios to the students. The goal was to help students develop epistemic knowledge skills and to clarify values related to those sex role attitudes found to meaningfully impact career implementation.

The results indicated that early adolescent females do not hold the rigidity and categorical attitudes toward life roles evident in late adolescence (Amatea et al., 1982). Festinger's theory (1957) would explain these results as indications that, most broadly, the norms and the mores of our culture are changing and that the early adolescents' attitudes are merely their reflections. As the attitudes of the group, as a whole, were very high, the instrument used in this study may have been particularly insensitive to the effects of the treatment.

However, the results showed that the treatment effectively made attitudes more uniformly high with the uppermost scores lowering and the lowest scores rising. Those upper most scores that were modified most likely represent scores that may be defined as those representing rigid and categorical attitudes with a strong career orientation. Perhaps, the intervention provided an understanding of some reality factors that may impinge or at least need to be considered in implementing a career. Thus, the attitudes changed to a more conservative position. Again, this is consistent with Festinger's theory of cognitive dissonance. Traditional roles are perhaps more familiar to young women who wish to pursue a nontraditional lifestyle. When confronted with conflict related to a nontraditional choice, resolution is found in the direction of a more traditional solution.

The subjects whose score rose, it may be inferred, did not originally have rigid/categorical career-related sex role attitudes that may be more resistant to change (Festinger, 1957) than moderate attitudes. Meichenbaum's (1977) explanation may contribute to an understanding of this finding:

> Self-instructions helped to bring behaviors (attitudes) under control because the forced mediation increases the distance between stimuli and responses; and, therefore, provided additional opportunity for interrupting the behavioral sequence. This separation between task presentation (stimulus) and performance (response) gives the child time to be more reflective and act in a more meaningful, controlled manner. (p. 151)

Summary

Research indicates that the sex-role socialization of women may lead to restricted career development. In particular, attitudes toward compromising education for early marriage and childbearing appear to inhibit career implementation. Cultural norms are shifting toward acceptance of the dual worker and single women headed household family arrangements. With this shift, women have experienced living in poverty, role overload, and role conflict.

This difficulty adjusting to changing environmental demands may be explained at a theoretical level. Gender role behaviors that may inhibit career implementation are deeply rooted in the identity system as a result of early exposure to traditional sex role models as well as to biological factors associated with sex differences in brain function and in reproduction. The literature shows that notions of sex-role appropriate behaviors become rigid and stereotypic by late adolescence. Thus, according to Festinger, they are resistant to modification. The development of epistemic knowledge and increased self-efficacy in problem-solving ability may contribute to increased flexibility in sex role attitudes and behaviors.

There is conflictual evidence in the literature as to the earliest point at which these skills may be learned. There are some indications that children as young as 10-12 may benefit from structured practice. Other literature shows the emergence of epistemic knowledge during late adolescence is necessary.

A pilot study was conducted to investigate the effects of structured practice of solving dilemmas involving gender role behaviors associated with marriage, childbearing, and career development of adolescent females. Practice was found to meaningfully shift adolescent females' gender role attitudes associated with career implementation.

CHAPTER 3
METHODOLOGY

The purpose of this study is to investigate the effects of a cognitive processing model on the career-related gender-role attitudes of early adolescent females. Also investigated will be the career related gender role attitudes and problem-solving self-efficacy of eighth grade girls. Areas delineated in this chapter are the hypotheses, the population, the sampling procedures, research design, treatment, assessment techniques, and research methodology.

Hypotheses

H_1: There will be no statistically significant difference between the group mean career related sex role attitudes posttest scores, as measured by The Attitude Toward Women Scale for Adolescents (AWSA), among the participants who receive the treatment and those in the control group.

H_2: There will be no statistically significant difference between the group mean problem-solving self-efficacy posttest scores, as measured by the Problem-solving Inventory (Form C) (1988), among the participants who receive the treatment and those in the control group.

H_3: There will be no statistically significant difference between participants who receive the treatment and the control group on the basis of demographics as measured by The Attitude Toward Women Scale for Adolescents (AWSA).

H_4: There is no statistically significant difference between participants who receive treatment and the control group on the basis of demographics as measured by The Problem Solving Inventory (Form C) (1988).

Description of Research Design

This study is a true experimental design with a pretest posttest control group.

R O X O
R O O
X = treatment
O = observation
R = random assignment to treatment condition

Description of Treatment

The cognitive training model, conducted by the researcher and assisted by nine middle school counselors, consisted of a total of six hours. The counselors passed out permission slips, collected them, and assembled the girls in groups to participate in the intervention. The researchers conducted the treatment. The six sessions are briefly described below.

The control group attended their regular class after meeting and took the pretest and completed demographic information form and returned 3 weeks later to take the posttest with the treatment group.

Treatment

The intervention is a six-session program focused on teaching problem-solving skills to 8th-grade females. The objectives are to develop problem-solving skills using a multiple solution strategy, to develop a positive problem-solving self-concept, and to help motivate students to successfully practice problem-solving strategies.

The students were placed at tables and asked to fill out questionnaires. The instruments used were The Attitude Toward Women Scale for Adolescents (AWSA), The Problem-solving Inventory (Heppner, 1988), and a survey to collect demographic data.

Session I (1 hour)

The following script was read to the treatment group:

> We are here to examine the impact of sex role expectations on our goals and on the decisions we make as young women in our society today. As you begin to make choices about how you will live your adult lives, this issue is one you may wish to explore in depth. The purpose of our meeting is to introduce you to a systematic way to approach solving problems you will face in everyday life about school, career, and family.
>
> The problem-solving model was handed out. The examiner said the following:
>
> Let's look at some "conflict situations":
>
> 1) You have been working all day and when you come home you feel you should spend some time playing with your new baby but you're so tired all you want to do is to be left alone.
>
> 2) You got a great part in a play (or orchestra or team) you've been wanting but your boyfriend wants you to turn it down because you'll be away at practice so often.
>
> 3) You've been offered two jobs; one that pays twice as much as the other but is half as interesting to you.
>
> 4) You want to spend the evening doing some work (or homework) at home but your boyfriend wants you to go out with him.
>
> Chances are, we'd all have a different solution to these problem situations as we, to some extent, have different beliefs, values and goals. One way to solve the problems we face in day to day living is to consider numerous alternatives and their possible consequences. That's what is meant by systematic problem solving.
>
> Here's an example:
>
> Step I - Problem Situation
>
> You have recently married. You and your husband are juniors in college. You're living on loans and finances are so tight you're really feeling stressed.

Step II - Possible Solutions

1. I could drop out of school and support my husband. I'll go back to school later.
2. He could get a job and postpone graduation so I could concentrate on my studies and finish my B.A.
3. We could both work part-time and go to school almost full-time.
4. We could borrow more and concentrate on graduating.

Step III - Expected Outcomes of Possible Solutions

1. I won't go back to school because when he graduates, I'll probably have a baby.
2. I'll want to start my career when I finish school so we'll have to move where the jobs are and therefore, he probably won't finish school.
3. We'd have enough money to know we could make it through school and we'll both finish. It will just take a little longer.
4. We still owe so much money, we will have to postpone having children until the debt is paid. It will take both of us working and I want to stay home a while with our babies.

Step IV - Which Outcome Do You Prefer?

Think to yourself.

Step V - What Is The Associated Solution To That Outcome?

For example, let's say you picked expected outcome #3 (read), the associated solution is (read).

Step VI - What Values Are Inherent In That Solution?

One might be that you really want to start a family soon after graduation (you definitely want to graduate), or perhaps, you do not want to risk having a large debt, for example.

Step VII - What Was The Problem?

That depends on the solution you chose and the values you identified. Just try to put it in your own words.

1. Subjects will practice applying the model to four problem scenarios in the handout.

2. Subjects will complete three more problem scenarios.

3. Students will be instructed verbally: "to apply the problem-solving strategy we have practiced to your real-life dilemmas and bring in a problem you faced about school and social or gender role behaviors for our next session.

> Thank you for participating in today's workshop. You are invited to apply the problem-solving strategy we have practiced to your real life dilemmas. Try to identify conflict situations throughout the week. If you can write them down. I look forward to seeing all of you at our next meeting.

Session II - (1 hour)

Worksheets were again handed out. The experimenter again went over the example problem, saying the following:

> It's good to see all of you back today. Let's start by going over our example from last week.

The group reviewed the model. The subjects were given three "conflict situations" to work through using the model. The examiner said

> Thank you for participating in today's workshop. You have completed a lot of hard work. I appreciate your efforts. Again, try to apply what you have learned throughout the week. Let's see everyone try to bring in a conflict situation for the next session. If you do not identify one in your own life this week, you can make one up. If not I will have other's for you during our next session. It's not mandatory. Have a good time and I will see all of you at our next session. Again, thank you for all of your hard work.

Session III (1 hour)

The examiner passed out handouts, saying

> I am pleased to see all of you today. If you brought in a conflict situation please insert it at the top of page one. If not, go directly to page two. Let's see the hands of those who brought in an example. (wait) Thank you.

Students were provided a structured framework (model) to apply to their own real-life dilemmas. The examiner read the following:

> Thank you for participating in today's workshop. You have completed a lot of hard work. I appreciate your efforts. Again, try to apply what you have learned throughout the week. Let's see everyone try to bring in a conflict situation for the next session. If you do not identify one in your own life this week, you can make one up. If not I will have other's for you during our next session. It's not manditory. Have a good time and I will see all of you at our next session. Again, thank you for all of your hard work.
>
> I am passing out an information sheet, I would appreciate your feedback about applying the problem-solving model.

Session IV

The examiner passed out the handouts, saying

> I am pleased to see you back again. Did you practice identifying conflict situations? (show of hands). If you brought one in today, please place it in the empty space at the top of the first page. If not, go on to page two.

Session V

The examiner said

> Welcome back to our research study. I appreciate your participation. Today, I have two forms I would like you to fill out. Take your time. You have plenty of time to complete them.

The instruments were passed out. Students were invited to openly discuss their reactions to the treatment. The examiner said

> Let's talk about what you liked and didn't like about this experience--perhaps, what you learned or what you would change. How about if we start over here (gesture to right or left)?

The conflict situations used were as follows:

1. You have been accepted to a prestigious college, but your boyfriend wants you to go to the local college with him.
2. Your boyfriend asked you to marry him, yet you have two years left in college and want to move to a big city when you finish.

3. You are offered an interesting, high-paying full-time job with many new opportunities, but you have a year old baby and would like to have another child.

4. You would like to go to school in the evenings so you can get a better job but your husband would prefer that you didn't because you'd be away in class or studying so often.

5. The baby has a sore throat and fever when you get up in the morning. Both you and your spouse have to be at work at 8 o'clock.

6. You have been working all day and when you come home you feel you should spend some time playing with your new baby, but you are so tired all you want to do is to left alone.

7. You got a great part in a play (or orchestra or team) that you have been wanting, but your boyfriend wants you to turn it down because you will be away at practice so often.

8. A boy you have been hoping would notice you just asked you to go to a big party tonight, but you have a math test tomorrow morning at 9:00 a.m.

9. You really like the boy you have been dating for 3 weeks, but he keeps pressuring you about sex.

10. You have been interested in dating a boy on the track team and he finally asked you out, but your girlfriends said he is insincere and goes out with a new girl after he has made a "conquest."

11. You met a boy who seems really sweet. He is the president of the Chess Club, but your girlfriends all said he is a nerd and you should not be seen with him.

Procedure

A description of this research proposal was submitted for review and approval to the University of Florida Institutional Review Board. Once approved, the proposal was presented to the Director of Research of the school systems selected, requesting permission to obtain data from all, randomly selected 8th grade girls attending each of the middle schools in that district.

With permission, all middle school principals were written a letter requesting their permitting this study to be conducted in their respective schools. The letter delineated the purpose of the study and the necessary procedures.

The researcher then requested the school counselor's assistance at each school approved. More specifically, the counselor was asked to assist in sending out and collecting parent consent forms (Appendix E) from all 8th grade female students enrolled in their respective schools. Those students who returned permission slips participated in the study.

Students in the treatment group were taken from varying class periods for each session. Students in the control group participated during the first session and the last session for the data collection phases. Students were responsible making up any work missed and arranged for classwork during missed hours in advance.

Population

The population under investigation in this study was comprised of 8th grade female students that demographically represented rural Florida counties. Girls were between the ages of 13 and 15. There were insufficient minority groups to identify race in demographic variables. The sample was comprised of 9 groups of students from Alachua, Marion, and Citrus counties, in all schools where the principal approves participation in the study. Nine principals approved participation in the study.

Description of Assessment Techniques

The Attitude Toward Women Scale for Adolescents (AWSA)

The AWSA evaluates how boys' and girls' attitudes toward women affect the life choices of adolescent girls. The AWSA is a 12-item paper and pencil instrument with a gloval score measureing one's attitudes toward women. The items (statements) represent attitudes about sex role behaviors associated with school, career, and family. The respondent indicates his or her level of agreement on a 4-point Likert Scale. Administration of the AWSA takes approximately 10 minutes in a group setting.

Four sets of data (total of 724 subjects from the midwestern region of the U.S.) were collected in a study to assess the reliability and validity of the AWSA (Tables 3-1 and 3-2). An examination of the results indicated the instrument is robust. The scale shows both good reliablility and validity with the population samples being early and middle adolescents. This appears to be an excellent instrument for identifying early adolescent females' attitudes about their sex role self-concepts in reference to family and career.

Problem-Solving Inventory—Form C (PSI)

The PSI (Form C) (Heppner, 1988) assesses the individual's self-efficacy as a problem-solver as measured by problem-solving behavior and attitudes. The instrument is a 35-item pencil and paper questionnaire, with a single index of problem-solving self-efficacy and three subscales on Problem-Solving Confidence, Approach-Avoidance Style, and Personal Control. Respondents indicate their level of agreement on a 6-point Likert scale. The test takes approximately 10-15 minutes and can be administered in a group setting.

Reliability estimates of stability and internal consistency were both very good with a = .89 and .90 (Tables 3-3 and 3-4). Concurrent, discriminant, and construct validity were assessed and were found by several studies to be good. Psychometrically, the PSI is a sound measure of problem-solving self-efficacy.

Table 3-1. Reliability. The Cronbach's alpha was used to determine reliability. Item-total correlations of the Attitudes toward Women Scale for Adolescents (AWSA) by sample and sex.

	Sample 1- grades 9-12		Sample 2 grades 9-12		Sample 3 grade 12		Grade 6		Grade 7		Grade 8	
AWSA Item	Boys (n=60)	Girls (n=65)	Boys (n=101)	Girls (n=167)	Boys (n=56)	Girls (n=69)	Boys (n=28)	Girls (n=39)	Boys (n=59)	Girls (n=77)	Boys (n=67)	Girls (n=72)
1	.63	.40	.28	.48	.39	.39	.60	.49	.18	.45	.43	.38
2	.39	.47	.38	.32	.60	.42	.28	.38	.03	.15	.20	.33
3*	.48	.26	.06	.06	.38	.03	.09	.04	.54	.17	.37	.30
4	.59	.62	.47	.58	.61	.33	.53	.24	.43	.33	.47	.19
5	.41	.43	.32	.36	.52	.46	.54	.42	.30	.25	.11	.37
6	.63	.59	.50	.55	.52	.40	.55	.59	.46	.46	.42	.20
7	.47	.56	.26	.41	.30	.47	.50	.34	.14	.29	.01	.26
8	.63	.60	.63	.48	.48	.36	.65	.23	.50	.25	.45	.11
9	.51	.49	.50	.43	.53	.31	.21	.09	.20	.28	.31	.26
10	.59	.59	.57	.40	.53	.49	.65	.11	.64	.51	.66	.39
11	.67	.62	.50	.49	.58	.32	.53	.50	.49	.29	.71	.35
12	.58	.62	.44	.23	.58	.28	.44	.42	.45	.52	.50	.19
Alpha	.86	.85	.77	.76	.84	.71	.80	.66	.72	.70	.71	.62

*This item was changed based on the low item-total correlation in Samples 2 and 4 (grade 6). Samples 3 and 4 (grades 7 and 8) were given item 3 as listed in the "Instrument" section.

Source: Galambos, Petersen, Richards, & Gitelson, 1985

Table 3-2. Validity. Concurrent validity was established with the Bem Inventory. Correlations between AWSA and the Bem Sex Role Inventory scales.

	Masculinity	Femininity	Androgyny
Sample 2			
Boys (n = 101)	.10	.09	.20*
Girls (n = 167)	.27*	.00	.25*
Sample 3			
Boys (n = 67)	.00	.26*	.23*
Girls (n = 72)	.09	.12	.00
Sample 4			
Grade 6			
Boys (n = 72)	.02	.33*	.33*
Girls (n = 95)	.00	.07	.00
Grade 7			
Boys (n = 115)	.07	.26*	.31*
Girls (n = 137)	.09	.08	.00
Grade 8			
Boys (n = 101)	.00	.19	.18
Girls (n – 127)	.03	.11	.05

*p<.05.

Source: Galambos et al., 1985

Table 3-3. Reliability. Estimates of reliability were calculated for each subscore. Internal consistency and test-retest reliability estimates.

	N of Items	Alpha			Retest		
		(N=150)	(N=66)	(N=146)	(N=31) 2 weeks	(N=64) 3 weeks	(N=29) 2 years
Problem-Solving Confidence	11	.85	.78	.85	.85	.78	.65
Approach-Avoidance Style	16	.84	.90	.86	.88	.77	.61
Personal Control	5	.72	.74	.73	.83	.81	.44
Total PSI	32	.90	.90	.91	.89	.81	.60

Source: Heppner, 1988.

Table 3-4. Validity. Estimates of concurrent, discriminate and contruct validity appear in the following table. Correlations with other variable and instruments.

Variable/Instrument	Problem-Solving Confidence	Approach-Avoidance Style	Personal Control	Total PSI
Perceived problem-solving skills	-.44	-.29	-.43	-.46
Satisfaction with skills	-.42	-.24	-.39	-.42
High school rank	.14	-.01	.18	.06
SCAT1				
Verbal	.09	.08	.11	.09
Quantitative	.14	.10	.12	.15
Total	.12	.11	.11	
SAT2				
Verbal				-.19
Math				-.31
Total				-.28
Missouri College English Test	-.03	-.12	.16	-.02
Missouri Mathematics Placement Test	.04	-.02	.11	.08
Social Desirability Scale	-.09	-.09	-.24	-.16
Rotter I-E Scale	.64	.53	.40	.61

Source: Heppner, 1988

The reading level of the PSI indicates the age range for which the PSI is appropriate; ages 10-18. The simplicity of the test contributes to its applicability to a broad age range of respondents. Form C will be used in this study, as according to the author, was developed especially for use with early adolescents.

Pilot Study

A pilot study was conducted to examine the ease of administration of instruments. Initially, there was concern over the age appropriateness of the instruments initially chosen. The authors of the instruments were contacted to determine these concerns about the selections. Both instruments The Values Scale (Second Edition) and the Problem Solving Inventory (Form B) were found to be inappropriate for children ages 12-14. The

Attitude Scale Toward Women and the Problem Solving Inventory (Form C) replaced those instruments as they were identified as age appropriate by the authors of the instruments. The demographic data form was also tested.

A school in Alachua County, Florida, was selected for the pilot study. Approximately 150 8th grade girls were given parent consent forms to take home, have parents sign, and return to the school guidance counselor. The first issue, returning permission slips was evaluated. Only 19 girls returned consent forms. An incentive was selected to help overcome that obstacle. Students were to be given a king size Snickers candy bar for returning the permission slips during the dissertation data collection.

The instruments were administered to the 19 participants. The Attitude Toward Women Scale and the Problem Solving Inventory (Form C) were found to be satisfactory. The demographic data forms had numerous problems and were corrected for the larger data collection.

The PSI (Form C) is divided into three parts: (a) confidence, (b) approach-avoidance, and (c) locus of control. The approach-avoidance section was particularly interesting. Four items were associated with epistemic knowledge skills. There were no statistically significant differences for any of the three subsections. However, when the four particular items were omitted, there was a statistically significant difference on this subsection between the treatment and control groups. There was an increase in approach behavior among the treatment group on the posttest. Due to this finding item entry was initially selected for statistical analysis.

The Attitude Toward Women Scale provided little discriminatory value for the 19 participants on the posttest. The literature may support those findings when compared to mothers working outside the home item on the demographic data form. Unfortunately, the particular item on the demographic data form was problematic. Students were asked how long their mothers worked outside the home. The girls often responded "don't know." This limited explanation of the findings. This item was then changed to, "Does your mother work outside of the home?" Due to the limited number of subjects in the pilot study and the initial difficulty with the demographic form, it was chosen to keep the Attitude Toward Women Scale in the study.

An analysis of covariance will be calculated for each hypotheses. Variables included are head of household, mother's marital status, income (lunch status), mother's education, mother's employment status, attitude toward women, and problem-solving style.

CHAPTER 4
DATA ANALYSIS

Demographic Data Analysis

Numbers by school have been given. Subjects are nested in groups (schools) and were delivered treatment as a group, not individually. Because of this, school is included as a factor in each analysis of covariance. Results cannot generalize beyond the participating schools.

Race

Six categories were determined from free response: Asian, Black, Hispanic (to include Latino), Mixed, Native American, and White. There was sufficient representations of these categories across all schools and treatment levels to use race in the analyses (Table 4-1). The categories were not collapsed into White and other because the five non-White categories are not similar enough to do that.

Head of Household

Students were provided three choices, which created confusion for a lot of students. Because mother and father were not specified, some students who lived with mom and stepdad, dad and stepmom, grandparents, foster care, or relatives did not know how to answer. "Intent" was not provided for these students. Their responses were left as "missing." Head of household was included in the analysis, but including it creates missing observations. Less than 15% of the subjects named their father as head of household (Table 4-2).

Table 4-1. Demographic data by race

		Control Group						Treatment Group					
	Miss	Asian	Black	Hisp.	Mix	Nat. A	White	Asian	Black	Hisp.	Mix	Nat. A	White
Crm	1	1	1	0	0	0	9	0	0	0	0	0	11
Csm	2	1	0	0	0	0	16	0	1	2	0	0	16
Dms	1	0	0	0	0	0	11	0	1	1	1	0	9
Fkm	1	0	0	0	0	0	12	0	1	0	0	0	11
Hms	0	0	0	0	0	0	6	0	0	0	0	0	6
Inv	0	0	0	1	0	0	15	0	0	0	0	0	9
Mcm	1	0	0	0	0	1	17	0	0	0	0	0	18
Oms	2	1	8	1	1	0	19	0	4	4	0	0	23
Total	8	3	9	3	2	1	105	0	7	7	1	0	103

Table 4-2. Demographic data by head of household

		Control Group			Treatment Group		
	Miss	Father	Mother	M/F	Father	Mother	M/F
Crm	3	6	4	1	2	2	5
Csm	1	2	4	13	2	5	11
Dms	0	1	4	6	2	6	5
Fkm	0	0	2	10	1	4	8
Hms	0	0	2	4	0	4	2
Inv	0	6	5	5	1	4	4
Mcm	1	0	8	9	2	9	8
Oms	4	2	12	17	4	11	15
Total	9	15	41	65	14	45	58

Mother's Marital Status

Again students were provided with three confusing choices. Students whose mothers were divorced and remarried had no response to make. There were also instances where the mother was never married and where single was not an option. Choices that did not clearly reflect the question were treated as missing. Mother's marital status was included in the study, but again its inclusion creates missing observations. Approximately one-third of the subjects had parents who were separated or divorced (see Table 4-3.)

Lunch

Here the three choices provided seemed adequate. The confusion in the pilot study was not present in the study. There were some missing observations, but in this instance, they all resulted from students not responding to the question. Lunch was included in the study. Approximately 25% of the subjects were on free-lunch status, 15% of the subjects were on reduced-lunch status, and the majority of subjects were on free-lunch status (see Table 4-4.)

Mother's Education

The students were provided with three choices that seemed to be adequate. Several students, who did not live with their mothers, had no idea about her education. Students whose mothers were educated in foreign countries did not know how to equate high school with the foreign systems. Over one-half of the subjects' mothers had an education level more than high school (see Table 4-5.)

Table 4-3. Demographic data of mother's marital status: Divorced, married, or separated

		Control Group			Treatment Group		
	Miss	Divorced	Married	Separated	Divorced	Married	Separated
Crm	0	7	5	0	5	6	0
Csm	1	3	12	3	5	13	1
Dms	3	0	9	1	2	8	1
Fkm	0	2	9	0	3	9	1
Hms	1	2	4	0	2	2	1
Inv	1	4	11	0	2	7	0
Mcm	2	2	13	2	4	11	2
Oms	3	6	20	4	6	22	4
Total	11	27	83	10	29	78	10

Table 4-4. Demographic data of lunch payment status as an indicator of income

		Control Group			Treatment Group		
	Miss	Free	Reduced	Full	Free	Reduced	Full
Crm	1	1	2	8	2	1	8
Csm	0	3	1	15	9	1	9
Dms	0	3	2	6	4	4	5
Fkm	0	1	0	11	1	1	11
Hms	0	0	4	2	1	3	2
Inv	0	5	1	10	2	0	7
Mcm	0	9	4	4	9	2	8
Oms	4	10	1	20	9	3	18
Total	5	32	15	109	37	15	68

Table 4-5. Demographic data of mother's education: High school, more than high school, or less than high school

	Miss	Control Group			Treatment Group		
		High School	More Than High School	Less Than High School	High School	More Than High School	Less Than High School
Crm	0	8	4	0	5	6	0
Csm	0	7	8	4	9	8	2
Dms	1	6	3	1	5	7	1
Fkm	0	2	10	0	3	9	1
Hms	0	0	6	0	2	2	2
Inv	2	6	7	2	1	7	0
Mcm	1	8	4	5	5	10	4
Oms	4	5	23	3	5	21	4
Total	8	42	65	15	35	70	14

Does Mother Work Outside of the Home?

Students were provided with two choices and this question did create some confusion. One student suggested her mother ran a business from the home and another suggested her mother had worked outside the home up until a few years ago. This confusion was treated as missing, but used does mother work outside of the home as a factor in the study. More than three-quarters of the subjects' mothers work outside of the home (see Table 4-6.)

Table 4-6. Demographic data of mother working out of the home

		Control Group		Treatment Group	
	Miss	Yes	No	Yes	No
Crm	1	10	2	6	4
Csm	2	14	3	16	3
Dms	2	8	1	8	4
Fkm	1	11	1	11	1
Hms	0	6	0	4	2
Inv	1	13	0	7	1
Mcm	0	12	4	12	7
Oms	3	27	7	22	8
Total	10	101	18	86	30

Table 4-7 shows participants' responses by school and treatment in control group categories. Shown is the frequency of missing responses by treatments.

Table 4-7. Frequency of missing observations

	Control Group	Treatment Group
Pretest Attitude	3	2
Posttest Attitude	5	8
Pretest Problem Solving I	6	6
Posttest Problem Solving I	14	8
Pretest Problem Solving II	7	13
Posttest Problem Solving II	17	21
Pretest Problem Solving III	2	5
Posttest Problem Solving III	5	7

In all cases, the number of missing observations increases for the posttest, and in some cases that difference is large. There was a difference by school even though a script/worksheet format was used.

Table 4-8 identifies the number of subjects in each school who participated in the study. It indicates how many students were in the control and treatment groups. A Cronbach's alpha was calculated as a measure of internal consistency (Table 4-9). Table 4-10 shows test-retest reliability.

Table 4-8. Number of subjects per school

School	Control Group	Treatment Group
Crm	12 (09.4%)	11 (09.0%)
Csm	19 (15.0%)	19 (15.6%)
Dms	11 (08.7%)	13 (10.7%)
Fkm	12 (09.4%)	13 (10.7%)
Hms	6 (04.7%)	6 (04.9%)
Inv	16 (12.6%)	9 (07.4%)
Mcm	18 (14.2%)	19 (15.6%)
Oms	33 (26.0%)	32 (26.2%)
Total	127	122

Table 4-9. Cronbach's alpha of internal consistency: Included are attitude and three problem-solving categories

Test	Alpha
Attitude	0.681055
Problem Solving I	0.717919
Problem Solving II	0.731182
Problem Solving III	0.758311

Table 4-10. Test-Retest reliability, including attitude and problem-solving categories

Test-Retest Reliability	
Attitude	.55854
Problem Solving I	.67959
Problem Solving II	.58311
Problem Solving III	.64113

Attitude Variable for Hypotheses #1 and #2

H_1: There will be no statistically significant difference between the group mean career values posttest scores, as measured by The Attitude Toward Women Scale for Adolescents (Research Edition, 1983), among the participants who receive the treatment and those in the control group.

H_2: There will be no statistically significant difference between participants who receive the treatment and the control group on the basis of demographics as measured by the Value Scale (Research Edition, 1983) or the Problem-Solving Inventory Form B (1988).

Full Model

The first model analyzed was a complete model that included the pretest, school, lunch, work, mother's marital status, head of household, mother's education, treatment, and treatment interactions with all of the previously mentioned variables. This full model has 15 independent variables.

Table 4-11. ANOVA of pretest by work and treatment by lunch

Source of Variance	Degrees of Freedom	F-Ratio	P-Value
Pretest	1	130.17	.0001
Work	1	4.50	.0343
Treatment*Lunch	2	2.71	.0697

$R^2 = .560422$ – Adjusted $R^2 = .5237$; Number of Observation 195 (Total number possible 249); Error Degrees of Freedom 174

Note: Treatment by lunch was of interest, thus, a reduced model was conducted.

Reduced Model

All interaction terms except Treatment interacting with Lunch were removed. School was kept in the model because removing the other terms decreased the probability that it did not account for significant portion of the variance.

Table 4-12. Reduced model of treatment, work, and treatment by lunch status

Source of Variance	Degrees of Freedom	F-Ratio	P-Value
Treatment	1	0.62	.4330
Pretest	1	153.74	.0001
Work	1	5.05	.0259
Treatment*Lunch	2	3.70	.0266
School	7	1.24	.2822

$R^2 = .548895$ – Adjusted $R^2 = .5489$; Number of Observation 195

Work Predicted Attitude

Treatment was not involved. Because the treatment by lunch interaction is significant, ANCOVAs by lunch variable were conducted.

Table 4-13. Full model: Attitude by lunch

Lunch Category	Number	Source	F-Ratio	p-value
Free	52	Treatment	1.98	.1682
		School	0.64	.7215
Full	118	Treatment	0.22	.6418
		School	2.08	.0522
Reduced	25	Treatment	8.55	.0152
		School	3.19	.0513

Table 4-14. Adjusted means: Attitude by lunch

	Treatment	Control
Free	40.528	41.741
Reduced	42.858	40.237
Full	40.967	41.208

Attitude

The treatment group had less traditional scores/reduced lunch. The ANCOVAs by lunch group indicates the treatment was effective among students receiving reduced lunches; however, there is strong evidence that this varies school by school.

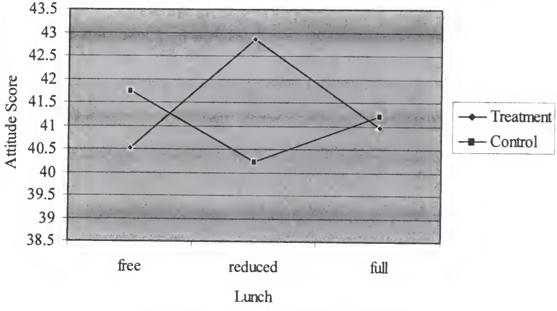

Figure 4-1. Attitude by treatment by lunch

Problem Solving I Variable for Hypotheses #2 and #3

H2: There will be no statistically significant difference between the group mean problem-solving self-efficacy posttest scores, as measured by the Problem-Solving Inventory Form B (1988), among the participants who receive the treatment and those in the control group.

Full Model

There is nothing here of note; the treatment was not effective. However, there is almost a treatment by lunch interaction (would be at the nominal alpha level of 0.10.)

Table 4-15. ANOVA--Lunch interaction among treatment, school, and income categories

Source of Variance	Degrees of Freedom	F-Ratio	P-Value
Pretest	1	56.88	.0001
Treatment	1	0.03	.8588
School	7	1.50	.1713
Treatment*Lunch	2	2.57	.0802

$R^2 = .439714$ – Adjusted $R^2 = .3894$, Number of Observations: 183; Error Degrees of Freedom 162

Reduced Model

Addressing hypothesis #3 again, all interaction terms except Treatment*Lunch were removed and the school variable was kept in the model. Treatment by Lunch interaction was not significant at the .10 alpha level. However, this finding was interesting. Although the interaction is not significant at the 0.05 level, the adjusted means for this variable were calculated. The graph shows the treatment scores are higher among the free lunch students indicating the treatment possibly has an adverse effect with this group.

Table 4-16. ANOVA: By treatment, school, and income (lunch) interactions

Source of Variance	Degrees of Freedom	F-Ratio	P-Value
Pretest	1	68.23	.0001
Treatment	1	0.05	.8263
School	7	1.45	.2297
Treatment*Lunch	2	2.32	.1016

$R^2 = .391625$ – Adjusted $R^2 = .3779$; Number of Observations 183

Table 4-17. Reduced model: Treatment by lunch interaction

	Treatment	Control
Free	26.452	30.327
Reduced	30.440	28.933
Full	30.731	29.243

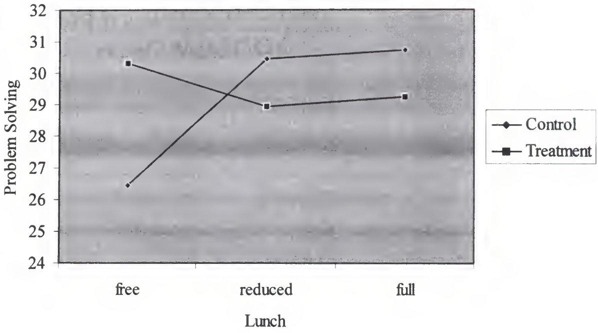

Figure 4-2. Problem solving by treatment by lunch interaction

Problem Solving II Variable

H3: There will be no statistically significant difference between participants who receive the treatment and the control group on the basis of demographics as measured by The Value Scale (Research Edition, 1983) or the Problem-Solving Inventory Form B(1988). This is the approach-avoidance scale, again low scores are considered good.

Full Model

This model has 15 independent variables including all possible interactions with treatment. This includes demographic variables, attitude, and problem-solving categories by treatment.

Table 4-18. ANOVA: Treatment by demographic variables, attitude and problem solving

Source of Variance	Degrees of Freedom	F-Ratio	P-Value
Pretest	1	80.70	.0001
Treatment	1	0.06	.8059
School	7	1.08	.3376

$R^2 = .537428$ – Adjusted $R^2 = .4911$; Number of Observations 166; Error Degrees of Freedom 130

Reduced Model

This model includes no interactions terms but does include school. School was of interest. Thus, a reduced model was calculated.

Table 4-19. ANOVA–Pretest by treatment by school interactions

Source of Variance	Degrees of Freedom	F-Ratio	P-Value
Pretest	1	104.55	.0001
Treatment	1	0.03	.8635
School	7	1.38	.2166

$R^2 = .50466$ – Adjusted $R^2 = .4955$

There is nothing significant about this variable. The treatment had no meaningful effect on subject approach—avoidance problem solving style.

Full Model

To determine areas of interest, a full model ANCOVA was calculated. The ANCOVA was calculated of pretests by school by treatment and by school by treatment interactions.

Table 4-20. ANCOVA: Pretest by school by treatment and school by treatment interactions

Source of Variance	Degrees of Freedom	F-Ratio	P-Value
Pretest	1	87.37	.0001
School	7	0.81	.5838
Treatment	1	0.03	.8547
Treatment*School	7	2.04	.0530

R^2 = .466906 – Adjusted R^2 = .4212; Number of Observations 191; Error Degrees of Freedom 155

Reduced Model

School by treatment was of interest. The p-value for treatment by school was .0530

Table 4-21. ANOVA–Pretest by school by treatment interactions

Source of Variance	Degrees of Freedom	F-Ratio	P-Value
Pretest	1	97.23	.0001
Treatment	1	0.35	.5553
School	7	1.00	.4324
Treatment*School	7	2.22	.0353

R^2 = .446068 – Adjusted R^2 = .4342

Table 4-22. Adjusted means of school by control and treatment groups

School	Control Group	Treatment Group
Crm	19.782	22.7574
Csm	20.260	18.0872
Dms	19.681	18.8568
Fkm	20.726	17.1824
Hms	19.1743	19.1672
Inv	17.3253	20.2500
Mcm	18.9336	19.9838
Oms	19.7337	16.1950

Problem Solving III

Separate ANCOVAs for each school determined in which school treatment made a difference. There is a significant effect at Oceola Middle School. The treatment had a positive effect on reduced lunch subjects on problem solving part III (personal control).

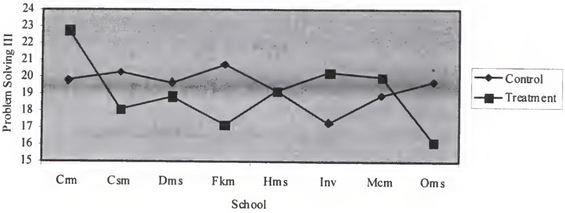

Figure 4-3. Treatment by school interaction

Table 4-23. ANCOVA: Treatment by school interaction on problem solving III, personal control

School	Number	F-Ratio	P-value
Crm	17	3.83	0.0911
Csm	33	3.20	0.0883
Dsm	18	1.56	0.2586
Fkm	24	0.95	0.3482
Hms	9	0.00	0.0000
Inv	19	1.28	0.2906
Mcm	28	2.08	0.1687
Oms	43	4.44	0.0433

CHAPTER 5
SUMMARY AND DISCUSSION

Summary

Research indicates that the sex role socialization of women may lead to restricted career development (Grinstaff, 1981). In particular, attitudes toward compromising education for early marrioage and childbearing appear to inhibit career implementation. Cultural norms are shifting toward acceptance of the dual worker and single female headed household family arrangments. With this shift, women have experienced living in poverty, role overload, and role conflict.

Since difficulty adjusting to changing environmental demands may be explained at a theoretical level. Gender role behaviors that may inhibit career implementation are deeply rooted in the identity system as a result of early exposure to traditional sex role models, as well as to biological factors associated with sex differences in brain Function and in reproduction. The literature shows notions of sex role appropriate behaviors become rigid and stereotypic by late adolescence. Thus, according to Festinger, they are resistant to modification. The development of epistemic knowledge and increased self-efficacy in problem-solving ability may contribute to increased flexibility in sex role attitudes and behaviors.

There is conflictual evidence in the literature as to the earliest point at which these skills may be learned. There are some indications that children as young as 10-12 may benefit from structured practice of problem solving with multiple strategy approaches. Other literature shows the emergence of epistemic knowledge during late adolescence.

A pilot study was conducted to investigate the effects of structured practice of solving dilemmas involving gender role behaviors associated with marriage, childbearing, and career development of adolescent females. Practice was found to meaningfully shift adolescent females' gender role attitudes associated with career implementation.

A study was conducted teaching eighth grade girls problem solving skills using a multiple solution strategy. Specifically, the students worked through many scenarios solving dilemma's provided for them associated with educational issues, dating, and early family life, and career over a period of three weeks. They were instructed to identify ill structured problems during their daily life. Also, they solved their own current problems that they brought to the sessions. The following results were found.

Findings

Attitude Scale

There was a lunch X treatment interaction. That is reduced lunch subjects were positively impacted by treatment. They had less traditional attitudes toward women than full lunch or free lunch students. Secondly, if mothers worked outside of the home there were higher scores than mothers who did not work. That means that those girls had less traditional gender role attitudes than girls whose mothers were homemakers.

Problem-Solving Inventory

PSI-I confidence. A lunch X treatment interaction was not significant at the .10 level, however, P=.1016. There was an adverse effect for free lunch subjects. They had higher scores on the PSI Confidence subsection and lower scores are better. There were no other significant results for this category.

PSI-II approach-avoidance. There were no significant differences between control and treatment groups for this subsection. This is important and will be discussed later in this chapter.

PSI-III personal control. Results varied by school. At Osceola Middle School there was a significant difference between control and treatment groups. Students who received reduced lunches were positively impacted by the treatment with a significant in the personal control variable.

Discussion

The analysis yielded a lunch by treatment interaction. Simply, this means that reduced lunch subjects were positively impacted by the treatment. The students in the reduced lunch income category had statistically significant less traditional scores as a result of participating in the treatment. This is interesting as there were no differences found among low income or free lunch category girls. Perhaps, occupational category had some effect on subjects. There is no current support for this finding in the literature or theory. Further, if mothers worked outside of the home there was an increase in attitude scores. This is supported by the literature. Gold and Andres (1978) found that when mothers are employed outside of the home, stereotypic gender roles and notions are less fixed and less stereotypic than when mothers do not work outside of the home. Daughters of employed women tend to become more career and achievement oriented and have higher self-esteem than girls whose mothers are not employed outside of the home. This may in part be due to the father playing a different role within the family structure.

Limitations

There are four primary limitations in this study. First, there were insufficient numbers on minority students participating in the study to include race as a variable. Secondly, the treatment was considered to be administered at the school level even though administration was uniform across schools and a script was used. Thus, this was modeled into the analysis and it is not possible to generalize beyond the schools used in this study. Thirdly, the girls used were considered a convent sample, as parental permission was necessary for the students to participate in the study. Lastly, the data collection lasted one calendar year. Therefore, history and maturation may have played a role in the results. Although this was not evident.

PSI-Confidence

There were no statistically significant findings in this category of the PSI. However, there was a lunch by treatment interaction that almost reached statistical significance at the .10 level (P=.1016). This finding is interesting.

There was adverse affect for free lunch subjects. The lowest income category students experienced less problem solving confidence as a result of participating in the treatment. Perhaps, there is something about living in the culture of poverty that impacts cognitive style in such a way that individuals would find using a multiple solution problem solving strategy confusing. This finding leads not to explanation; rather, it provides further questions.

According to Bandura's self-efficacy theory; people avoid activities that they believe exceed their coping capacity. This has meaningful implications for research and practice.

PSI-Approach Avoidance

There were no statistically significant differences between control and treatment groups in this category. This is important. PSI approach-avoidance items may reflect what King and Kitchner (1983) and Super and associates (1963) refer to as epistemic knowledge skills. This finding may support King and Kitchner's position about ill structured problems requiring a meta cognitive problem solving strategy (epistemic knowledge) skills. That is the girls could not benefit from the treatment due to a lack of epistemic knowledge.

However, interestingly, scores for both groups were moderate. This may support Piaget's theory of intelligence although children ages 12-14 are in formal operational thinking, they may prefer to think in concrete terms. Further, Super and associates (1963) stated that epistemic knowledge skills become developmental tasks by age 15. Perhaps, by age 15 adolescents begin to think more often in abstract terms and feel more comfortable with the strategy used in this study. Again, there are no clear answers and leave many questions.

PSI-Personal Control

The results in this category varied by school. At one middle school there were statistically significant differences between control and treatment groups. The treatment group experienced increased personal control scores as a result of participating in the treatment. In looking for an explanation some differences became evident. First, there were differences in the administration of the pretest and the posttest and in the administration of the treatment.

At all of the other schools, students were in small groups seated at tables or desks. At Osceola Middle School, 100 subjects were seated in an auditorium for the pretest.

Also, approximately 32 students participated in the treatment. They were seated on the floor or on the stage, often. Further, only 33 girls in the control group participated in the posttest. And, there was some talking. Thus, there may have been no meaningful results. There may be cultural differences between the students in these schools.

Further Research

The PSI Form C can be administered to children from the 5th grade through the 12th grade. We can look for shifts or changes in the approach avoidance category. This may help clarify the controversy in reference to epistemic knowledge and epistemic knowledge skills. For example, if there are clearly categorical shifts from the 5th through the 12th grade, this may support Piaget's developmental theory. In contrast, if there is a sudden shift at the age of 15 or 16, this has implications to support the need for epistemic knowledge to develop problem solving skills associated with ill-structured problems.

Looking at the mother's occupational category may serve to shed light on the findings in regard to attitude toward women's roles and income category. Perhaps, mothers have more skilled positions than others.

Studying the impact of culture on cognitive style may shed light on the findings on the confidence category of the PSI Confidence subscale. The impact of culture and language development may contribute further to understanding of culture and cognitive style. Further, although a measure of problem-solving style was evaluated (PSI II), a measure of actual decision-making skills would contribute an additional perspective.

APPENDIX A
TREATMENT

Treatment

Time: 6 hours - total
Group Size: 30 students

Objectives

1) Develop problem solving skills.
2) Help create goals and motivating forces and provide "successful practice" experiences.
3) Make individuals aware of self-change (self concept).

SESSION I (1 hour)

Procedure

1) Place students at rectangular tables.
2) Introduce purpose of the session to group members.

The group will be given the following instruments to complete:

A) The Attitude Toward Women Scale for Adolescents (AWSA) (Galambos et al., 1985).
B) Problem Solving Inventory (Heppner, 1988).
C) Demographic data will be collected.

The control group will then be dismissed.

Treatment Group:

"We are here to examine the impact of sex role expectations on our goals and on the decisions we make as young women in our society today. As you begin to make choices about how you will live your adult lives, this issue is one you may wish to explore in depth. The purpose of our meeting is to introduce you to a systematic way to approach solving problems you will face in everyday life about school, career, and family."

3) Pass out problem solving model handout.

Say,
Let's look at some "conflict situation" (adapted from Amatea & Cross, 1982):

1) You have been working all day and when you come home you feel you should spend some time playing with your new baby but you're so tired all you want to do is to be left alone.

2) You got a great part in a play (or orchestra or team) you've been wanting but your boyfriend wants you to turn it down because you'll be away at practice so often.

3) You've been offered two jobs; one that pays twice as much as the other but is half as interesting to you.

4) You want to spend the evening doing some work (or homework) at home but your boyfriend wants you to go out with him.

Chances are, we'd all have a different solution to these problem situations as we, to some extent, have different beliefs, values and goals. One way to solve the problems we face in day to day living is to consider numerous alternatives and their possible consequences. That's what is meant by systematic problem solving.

Here's an example:

Step I - Problem Situation

You have recently married. You and your husband are juniors in college. You're living on loans and finances are so tight you're really feeling stressed.

Step II - Possible Solutions

1) I could drop out of school and support my husband. I'll go back to school later.

2) He could get a job and postpone graduation so I could concentrate on my studies and finish my B.A.

3) We could both work part-time and go to school almost full-time.

4) We could borrow more and concentrate on graduating.

Step III - Expected Outcomes of Possible Solutions

1) I won't go back to school because when he graduates, I'll probably have a baby.

2) I'll want to start my career when I finish school so we'll have to move where the jobs are and therefore, he probably won't finish school.

3) We'd have enough money to know we could make it through school and we'll both finish. It will just take a little longer.

4) We still owe so much money, we will have to postpone having children until the debt is paid. It will take both of us working and I want to stay home a while with our babies.

Step IV - Which Outcome Do You Prefer?

Think to yourself.

Step V - What Is The Associated Solution To That Outcome?

For example, let's say you picked expected outcome #3 (read), the associated solution is (read).

Step VI - What Values Are Inherent In That Solution?

One might be that you really want to start a family soon after graduation (you definitely want to graduate), or perhaps, you do not want to risk having a large debt, for example.

Step VII - What Was The Problem?

That depends on the solution you chose and the values you identified. Just try to put it in your own words.

1) Subjects will practice applying the model to four problem scenarios in the handout.

2) Subjects will complete three more problem scenarios.

3) Students will be instructed verbally: "to apply the problem-solving strategy we have practiced to your real-life dilemmas and bring in a problem you faced about school and social or gender role behaviors for our next session."

Say,

Thank you for participating in today's workshop. You are invited to apply the problem-solving strategy we have practiced to your real life dilemmas. Try to identify conflict situations throughout the week. If you can write them down. I look forward to seeing all of you at our next meeting.

SESSIONS II - (1 hour)

(hand out worksheets)

1) The experimenter will again go over the example problem.

Say,

It's good to see all of you back today. Let's start by going over our example from last week (review model).

2) The subjects will be given three "conflict situations" to work through using the model.

Say,

Thank you for participating in today's workshop. You have completed a lot of hard work. I appreciate your efforts. Again, try to apply what you have learned throughout the week. Let's see everyone try to bring in a conflict situation for the next session. If you do not identify one in your own life this week, you can make one up. If not I will have other's for you during our next session. It's not manditory. Have a good time and I will see all of you at our next session. Again, thank you for all of your hard work.

SESSION III (1 hour)

(pass out worksheets)

Say,

I am pleased to see all of you today. If you brought in a conflict situation please insert it at the top of page one. If not, go directly to page two. Let's see the hands of those who brought in an example. (wait) Thank you.

1) Students will be provided a structured framework (model) to apply to their own real-life dilemmas.

Say,

Thank you for participating in today's workshop. You have completed a lot of hard work. I appreciate your efforts. Again, try to apply what you have learned throughout the week. Let's see everyone try to bring in a conflict situation for the next session. If you do not identify one in your own life this week, you can make one up. If not I will have other's for you during our next session. It's not manditory. Have a good time and I will see all of you at our next session. Again, thank you for all of your hard work.

Say,

I am passing out an information sheet, I would appreciate your feedback about applying the problem-solving model.

SESSION IV

(pass out handouts)

Say,

I am pleased to see you back again. Did you practice identifying conflict situations? (show of hands). If you brought one in today, please place it in the empty space at the top of the first page. If not, go on to page two.

1) The entire group of sixty students will meet. They will be given the following instruments to complete:

SESSION V

Say,

Welcome back to our research study. I appreciate your participation. Today, I have two forms I would like you to fill out. Take your time. You have plenty of time to complete them. (pass out instruments)

A. The Attitude Toward Women Scale for Adolescents (Petersen, 1988).
B. Problem-Solving Inventory--Form B (Heppner, 1988).

2) Students will be invited to openly discuss their reactions to the treatment: "Let's talk about what you liked and didn't like about this experience; perhaps, what you learned or what you would change. How about if we start over here (gesture to right or left)?"

Cognitive Problem-Solving Strategy Model

Step I - Conflict Situation

1) You have been accepted to a prestigious college, but your boyfriend wants you to go to the local college with him.

2) Your boyfriend asked you to marry him, yet you have two years left in college and want to move to a big city when you finish.

3) You are offered an interesting, high-paying full-time job with many new opportunities, but you have a year old baby and would like to have another child.

4) You would like to go to school in the evenings so you can get a better job but your husband would prefer that you didn't because you'd be away in class or studying so often.

5) The baby has a sore throat and fever when you get up in the morning. Both you and your spouse have to be at work at 8 o'clock.

6) You have been working all day and when you come home you feel you should spend some time playing with your new baby, but you are so tired all you want to do is to left alone.

7) You got a great part in a play (or orchestra or team) that you have been wanting, but your boyfriend wants you to turn it down because you will be away at practice so often.

8) A boy you have been hoping would notice you just asked you to go to a big party tonight, but you have a math test tomorrow morning at 9:00 a.m.

9) You really like the boy you have been dating for 3 weeks, but he keeps pressuring you about sex.

10) You have been interested in dating a boy on the track team and he finally asked you out, but your girlfriends said he is insincere and goes out with a new girl after he has made a "conquest."

11) You met a boy who seems really sweet. He is the president of the Chess Club, but your girlfriends all said he is a nerd and you should not be seen with him.

Step II - Possible Solutions

1)

2)

3)

Step III - Expected Outcomes of Possible Solutions

Solution #1

Solution #2

Solution #3

Solution #4

Step IV - Which Outcome Do You Prefer?

Step V - What Is The Associated Solution To That Outcome?

Step VI - What Values Are Inherent In That Solution?

Step VII - What Was The Problem?

APPENDIX B
QUESTIONS FOR SESSION II

Questions for Session II

1. What do you like best about using this strategy?

2. What is most difficult about using this model?

3. How has using this strategy effected your decisions?

4. How often would you apply this model when making a decision?

APPENDIX C
LETTER TO SUPERINTENDENT

10175 North Citrus Springs Blvd
Citrus Springs, FL 34434

Dear Superintendent:

I am a doctoral candidate in the Department of Counselor Education at the University of Florida. For my dissertation I am conducting a study investigating the effects of systematic problem solving on gender role attitudes as they relate to career implementation among early adolescent females.

This is to request that I be permitted to work with guidance counselors in each of the county's middle schools during Spring or Fall of 2000, in implementing this study. It entails 60 eighth grade female students at each school completing The Attitude Toward Women Scale for Adolescents (Petersen, 1988) and The Problem-Solving Inventory - Form C (Heppner, 1988. I will also collect demographic data. Administration time is approximately 1 hour. Thirty students at each school will also have the opportunity to develop problem-solving skills in a 4-hour treatment during which time the participants will learn and practice a problem-solving strategy.

Thank you for considering my request. I look forward to your correspondence. If you have any questions, please do not hesitate to contact me at (352) 489-5346.

Sincerely,

Shannon K. Sharef
Doctoral Student
Department of Counselor Education

SSK/pl

APPENDIX D
LETTER TO PRINCIPALS

10175 North Citrus Springs Blvd.
Citrus Springs, FL 34434

Dear Principal:

I am a doctoral candidate in School Counseling in the Department of Counselor Education at the University of Florida. For my dissertation I am conducting a study investigating the effects of applying systematic problem solving on gender role attitudes as they relate to career implementation among early adolescent females and on problem solving self efficacy.

This is to request your permission to work with your guidance counselor during Spring or Fall, 2000 in implementing this study. It entails 60 eighth grade female students completing the The Attitude Toward Women Scale for Adolescents (Petersen, 1988) and The Problem-solving Inventory--Form C (Heppner, 1988) as they relate to education and career implementation. I will also collect demographic data. Administration time is approximately 1 hour for the pre and post test. Thirty of those students chosen will also have the opportunity to develop problem-solving skills in a 4-hour treatment during which time the participants will learn and practice a problem-solving strategy. I am sensitive to the needs to not take students out of academic classes. If approved, I will work closely with your school counselor to remove students only from non academic classes such as exploratory courses and physical education.

Thank you so much for considering my request. I look forward to your correspondence. If you have any questions, please do not hesitate to contact me at 1-352-489-5346.

Sincerely,

Shannon K. Sharef
Doctoral Candidate
Department of Counselor Education

SSK/pl

APPENDIX E
PARENT CONSENT FORM

Parent Consent Form

Dear Parents,

I am a doctoral candidate in school counseling at the University of Florida. As part of my dissertation research I need to gather information on 8th grade females' attitudes toward various lifestyles as they relate to career choices and decision-making. I will need to administer The Attitude Toward Women Scale for Adolescents and The Problem-solving Inventory--Form C, paper and pencil questionnaires which takes about 1 hour to complete. One-half of the students filling out the questionnaire will participate in a 4-hour program in which they will learn problem-solving skills that will be helpful to them with decision-making throughout their lives. The others will receive the treatment after they complete the inventories.

The children will be tested by me in the guidance department at their school. Students will miss a total of four class hours. Student's will miss each class period only once. Participating in this group should be a fun learning experience for them.

All results will be used for research purposes only and children's responses will be coded such that no identifying information, such as your child's name, will be associated with her responses on the posttest or treatment sheets. Results of the study will be made available by me upon request.

You may withdraw permission for your child's participation in the study at any time. Further, participation or non-participation will have no effect on your child's grade in any class.

Please contact me if you have any questions or concerns at (352) 489-5346.

Thank you.

I have read and I understand the procedure described above. I agree to allow my child, _________________________, to participate in Shannon Knight's Career Decision-Making study and I have received a copy of the description.

SIGNATURES:

_______________________ ______________________________

Parent/Guardian Date 2nd Parent/Witness Date

APPENDIX F
DEMOGRAPHIC DATA SHEET

Demographic Data Sheet

Race: ______________________________

Head of household:

___ mother

___ father

Mother's marital status:

___ married

___ separated

___ divorced

Years your mother has worked outside the home: __

Mother's education
___ Some high school
___ High school
___ Some college
___ College
___ Graduate school

Student's lunch status
___ Free
___ Reduced
___ Full

APPENDIX G
REQUEST PERMISSION TO USE INSTRUMENTS

DATE

Dr. P. Paul Heppner
210 McAlester Hall
Psychology Department
University of Missouri
Columbia, MO 65211

Dear Dr. Heppner:

I am writing in reference to the instrument you developed, Problem Solving Inventory (PSI), 1988. I am a doctoral student in the Department of Counselor Education at the University of Florida, and I am interested in using your instrument as a dependent measure for a treatment I am testing as part of my doctoral dissertation. I am requesting permission to use your instrument in my dissertation research. Also, I may use your instrument, how can I obtain 500 copies of it? It would be my pleasure to send you a copy of the completed study.

I appreciate your consideration and look forward hearing from you at your earliest convenience. Thank you.

Sincerely,

Shannon Knight
Doctoral Student
Department of Counselor Education
University of Florida

DATE

Dr. Anne C. Petersen
S-110 Human Development
The Pennsylvania State University
University Park, PA 16802

Dear Dr. Petersen:

I am writing in reference to the instrument you developed, The Attitude Toward Women Scale for Adolescents (AWSA), 1988. I am a doctoral student in the Department of Counselor Education at the University of Florida, and I am interested in using your instrument as a dependent measure for a treatment I am testing as part of my doctoral dissertation. I am requesting permission to use your instrument in my dissertation research. Also, I may use your instrument, how can I obtain 500 copies of it? It would be my pleasure to send you a copy of the completed study.

I appreciate your consideration and look forward hearing from you at your earliest convenience. Thank you.

Sincerely,

Shannon Knight
Doctoral Student
Department of Counselor Education
University of Florida

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BIOGRAPHICAL SKETCH

Shannon K. Sharef attended the University of Michigan and the University of Miami as an undergraduate majoring in psychology and sociology. She has attended the University of Florida studying speech, music, and counseling.

Shannon has an MEd/EdS in school counseling and is acquiring a PhD in counselor education, subspecializing in school counseling. She has been invited to teach the school counseling curriculum at Webster University in Ocala, Florida.

EFFECTS OF A COGNITIVE PROCESSING MODEL ON THE CAREER RELATED GENDER ROLE ATTITUDES AND PROBLEM-SOLVING SELF-EFFICACY OF ADOLESCENT FEMALES

SHANNON K. SHAREF
(352) 489-5346
Counselor Education
Dr. Mary Howard-Hamilton
Doctor of Philosophy
May 2002

Contributions

The data from this study may contribute significantly to the development of vocational theories appropriate to the female population studied as well as assist in defining the applicability of currently applied career development theories to women. The findings may provide a research focus on the factors meaningful in the career development of women and in their successful implementation of careers.

In addition, the professional practice of educators may be enhanced by increased knowledge acquired regarding the career development needs of females. For example, school counselors' identifying appropriate goals for guidance programs, strategies selection, program development, identifying resources and activities may be improved. The results may also help teachers increase their sensitivity to the special needs of female students. Also, their choices of instructional strategies may be impacted. Additionally, school administrators who have acquired such knowledge may be more likely to provide the necessary support for successful implementation of new programs and for making changes in currently implemented ones. Further, this intervention has positively impacted hundreds of girls in rural communities in the state of Florida.

I certify that I have ready this student and that in my opinion it conforms to acceptable standards of scholarly presentation is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Mary Howard-Hamilton, Chair
Associate Professor Educational Leadership,
Policy, and Foundations

I certify that I have ready this student and that in my opinion it conforms to acceptable standards of scholarly presentation is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Peter

Peter A. D. Sherrard
Associate Professor of Counselor Education

I certify that I have ready this student and that in my opinion it conforms to acceptable standards of scholarly presentation is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Silvia C.E. Doan

Silvia Echevarria-Doan
Associate Professor of Counselor Education

I certify that I have ready this student and that in my opinion it conforms to acceptable standards of scholarly presentation is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

James H. Pitts

James H. Pitts
Associate Professor of Counselor Education

I certify that I have ready this student and that in my opinion it conforms to acceptable standards of scholarly presentation is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Lamont Flowers

Lamont A. Flowers
Assistant Professor of Educational Leadership,
Policy, and Foundations

I certify that I have ready this student and that in my opinion it conforms to acceptable standards of scholarly presentation is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

May 2002

Dean, College of Education

Dean, Graduate School